

S9086-KC-STM-010/300, NSTM Chapter 300, Electric Plant-General  
Intermediate Review Consolidated Comments

COMMENTS	CMT #	PARAGRAPH	COMMENT	SEA 05Z DISPOSITION (If agree, indicate change exactly as it appears in the text of the document; if disagree, provide rationale.)
Stephen Rourke		300-1	NO CHANGE SYSOPSIS. It would have been easier to evaluate change that way.	A change bar will be added to the document to reflect a change. A paragraph of the overview of changes will be added to the document.
Stephen Rourke		300-1	Formatting issue (300-1.1 Scope page 300-1 not aligned right.)	Editorial. Aligned right.
John Lastowski		300-1.2.1	Reference r. - I think this is supposed to be NSTM Chapter 079, volume 4...please verify.	Concur. Action complete.
Howard Snyder		300-1.2.1	Add reference "s. NSTM Chapter 230, Occupational Safety, Health and Environmental Control Manual for Naval Shipyards"	Added. Insert verbiage into document to reference Chapter 230.
John Lastowski		300-1.2.3	Volume 3 of the Ship Information Book is specifically called out. Do the other volumes of the Ship Information Book not apply as far as equipment and/or system information relates?	Concur.
RPPY		300-1.2.3	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Comments incorporated.
John Lastowski		300-1.2.5	Add 's' to "cable" in "Other diagrams show the location of the permanently installed fittings and cable of the casualty power system, and of the portable switches and racks for the storage of portable cable."  Add ' – Volume 3,' after "Refer also to NSTM Chapter 079" in last sentence.	Added.
Dennis Neitzel		300-1.2.6	Delete s from "equipment". "When installed, the PMS supersedes any existing preventive maintenance programs and conflicting technical directives for equipment covered."	Concur. Action complete.
John Lastowski		300-1.2.6	equipment not equipments	See disposition in comment #10.
Mark Klung		300-1.2.7	<i>Current Wording:</i> a. Naval Sea Systems Command (NAVSEA) 0900-LP-060-2010 Electrical Machinery Repair, Vol 1, Electric Motor Repairs <i>Recommended Change:</i> a. S6260-BJ-GTP-010 Electrical Machinery Repair; Volume 1, Electric Motor Repair, Shop Procedures Manual <i>Justification:</i> Technical Manual has been superceded.	Concur. Added reference.
Howard Snyder		300-1.2.7	Add reference "f. NAVSEA 04R Occupational Safety, Health, and Environmental Control Manual Letter, 5090 Ser 04R/010, 08 April 2003"	See comment #6. Don't incorporate letter number.

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CESWG		300-1.2.8	Add as reference (f) NAVSEA 04R Occupational Safety, Health, and Environmental Control Manual letter, 5090 Ser 04R/010 08 April 2003 <i>Reveiw Action:</i> 11-8-10 Added as Ref. (F).: f. NAVSEA 04R Occupational Safety, Health, and Environmental Control Manual Letter, 5090 Ser 04R/010, 08 April 2003	See comment #6. Don't incorporate letter number.
Gary Watson		300-1.2.8	Add as reference (f) NAVSEA 04R Occupational Safety, Health, and Environmental Control Manual letter, 5090 Ser 04R/010 08 April 2003	See comment #6. Don't incorporate letter number.
CDR Gelker		300-2	Title is "Precautions". At want point do these become "requirements" with regards to all of the concern and discussion of the current mishaps.	Action complete. Will be reviewed again by the team. Inform Khosrow and John if there are disagreements.
Stephen Rourke		300-2	Formatting issue (300-1.1 Scope not aligned right)	Aligned right.
CDR Gelker		300-2.1.1	Section discusses "guidance". Again with current focus on mishaps and fatalities, this should be changed to requirements.	No change required.
John Lastowski		300-2.1.1	Move first sentence from 300-2.1.1.1, "Electrical safety is an all hands evolution.", to end of 300-2.1.1.	Change is incorporated.
Howard Snyder		300-2.1.1	Add note after paragraph " <b><u>NOTE</u></b>  Naval Shipyards execute electrical work during assigned availabilities in accordance with the OSHE NAVSEA Control Manual Chapter 230, Electrical Safety Policy."	Added: "NOTE: Naval Shipyards conduct electrical work in accordance with reference f. For repair activity work conducted shipboard not in accordance with NSTM Chapter 300, a memorandum of agreement must be documented between shipyards/repair activities and ship's force."
NNSY Code 2330		300-2.1.1 and 300-2.1.1.1	On page 300-28 in paragraph 300-2.1.1 & 300-2.1.1.1 both only refer to sailors and not technicians. If section 2 is to apply to shipyard civilian personnel then these paragraphs should refer to more than just sailors; or state that shipyard personnel work to the requirements of OSHE 230.	See comment #20.
Dennis Neitzel		300-2.1.1.1	Add "and qualified", "and maintain", and "are". "...chain of command to ensure that sailors are properly trained <u>and qualified</u> to operate <u>and maintain</u> electrical systems and <u>are</u> ..."	Concur. Added words.
CESWG		300-2.1.1.1	Suggestion for placement of Item #1 above: Add a Note containing item #1 above verbiage that NAVSEA 05Z agreed to put into this revision following the last sentence. This location would be the best place for it as applies to all hands and personal responsibility and the next paragraph that tells the TYPE Commanders about general guidance for all maintenance and operations of electrical systems and components for all platforms. <i>Review Action:</i> 11-5-10 Done	No disposition needed.

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Gary Watson		300-2.1.1.1	Add a Note containing item #1 above verbiage that NAVSEA 05Z agreed to put into this revision following the last sentence. I believe this location would be the best place for it as applies to all hands and personal responsibility and the next paragraph that tells the TYPE Commanders about general guidance for all maintenance and operations of electrical systems and components for all platforms.	See comment #23.
Howard Snyder		300-2.1.1.1	Add paragraph heading "Electrical safety."	Do not concur due to document structure.
CDR Gelker		300-2.1.1.2	States "guidance", but then discusses TYCOMs issuing requirements that do not conflict with guidance. It then further discusses "requirements". Very confusing as to what is what.	Added "and requirements" to first sentence.
John Lastowski		300-2.1.1.2	Change first sentence to read "This chapter provides the general guidance and requirements..."  Change 'should' to 'shall' in second sentence.  Update second to last sentence to read "Checklists may be issued as operator aids for compliance with these requirements, are good tools for use by technicians, operators, and supervisors, but a checklist shall not take the place of the guidance and requirements of this manual."	Complete
Howard Snyder		300-2.1.1.2	Add paragraph heading "Guidelines."	Do not concur due to document structure.
SUBPAC N4		300-2.1.1.2	a. This section allows TYCOM "to issue local instructions that clarify the requirements of this manual as it pertains to their enterprise" and requires that TYCOM obtain NAVSEA approval before issuing "any guidance that is contradictory to this manual." 300-2.4.1.3 requires CO's permission before using modifications to the requirements of 300-2.4.3 (Energized Circuit Working Procedures) allowed by TYCOM guidance. b. If, for example, SUBFOR obtained concurrence from NAVSEA and issued a SSORM article relaxing an NSTM Ch. 300 requirement, section 300-2.4.1.3 requires that CO's permission be obtained to using the SSORM relaxation. Requiring CO's permission to utilize a work practice authorized by a TYCOM instruction that was approved by NAVSEA is unnecessarily cumbersome. c. <b>Recommend</b> changing the third sentence of 300-2.4.1.3 to, "The modification of requirements should only be used after evaluating the risks against the operational benefits."	Do not concur.
Dennis Neitzel		300-2.1.1.3	Add "to". "This section relates <u>to</u> potential dangers present in electrical systems..."	Editorial. Action complete.
CDR Gelker		300-2.1.1.3	"Guidance" and "requirements" both discussed. Need to go to "requirements".	No change required.

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John Lastowski		300-2.1.1.3	There are missing titles to the paragraphs throughout revision - 300-2.1.1.1 Procedural Compliance. The need for caution... - 300-2.1.1.2 Guidance. This chapter provides... - 300-2.1.1.3 Section 2 information. This section relates... - etc., etc., etc (formatting throughout revision)	Do not concur. (Reserved to come back to).
John Lastowski		300-2.1.1.3	Change 'section' to 'chapter' in first sentence.	Action complete.
Howard Snyder		300-2.1.1.3	Add paragraph heading "Potential dangers."	Do not concur. (Reserved to come back to).
CDR Gelker		300-2.1.2	Statement is made that "precautions must always be observed". So this makes it a requirement. State it as such. It is no longer guidance if it "must be observed."	Do not concur. This is a general section that is leading into requirements.
John Lastowski		300-2.1.2.2	Add intro heading for consistency. Change "Ref a" to bold font.	Action complete.
John Lastowski		300-2.1.2.2	Recommend adding Navy specific numbers to sentence reading "Electrocution is the fourth leading cause of industrial fatalities, after traffic, homicide, and construction accidents."	Do not concur. No action required.
Howard Snyder		300-2.1.2.2	Add paragraph heading "Statistics"	Do not concur.
John Lastowski		300-2.1.2.2 - 300-2.1.2.6	These paragraphs should be subparagraphs under 300-2.1.2.1 Electric Shock as these paragraphs discuss electric shock more than they explain 300-2.1.2 ELECTRIC HAZARDS.	Concur. Changes will be made to numbering in final version.
Stephen Rourke		300-2.1.2.3	Could add current (6.25mA for 7 ½ watt, 120 volt lamp, if past across the chest, is enough to cause a fatality.	Noted. Not incorporated. Implied by existing words.
CESWG		300-2.1.2.4	Change b. and c. to "c. and d." Then add as "b. 5mA Class A – GFCI set point. This would then be a better table to show sailors the amount of current needed where it becomes unsafe. <i>Review Action</i> : 11-9-10 Done b. 6 mA Class A- GFCI set point c. 10 mA, a person may be unable to let go. d. 100 mA, shock may be fatal if it lasts for one second or more.	Noted. Not incorporated. Implied by existing words.

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John Lastowski		300-2.1.2.4	<p>Update second sentence to read "The resistance of the human body is quite low and cannot be relied upon to prevent fatal shock from occurring from voltages greater than 30V"</p> <p>Add sentence after second sentence to read "The resistance of the human body is typically around 500 ohms."</p> <p>Update third sentence to read "When the skin is damp as may be the case in the propulsion plant, body resistance can be as low as 300 ohms."</p> <p>Add second sentence to 300-2.1.2.4 c "This determines the 30V threshold above which personnel protective equipment for energized work is required."</p>	Concur. Changes incorporated.
RPPY		300-2.1.2.4	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Concur. Changes are incorporated.
Gary Watson		300-2.1.2.4 b	Change b. and c. to "c. and d." Then add as "b. 5mA Class A – GFCI set point. This would then be a better table to show sailors the amount of current needed where it becomes unsafe.	Do not concur.
John Lastowski		300-2.1.2.5	All references to section 2.9 and section 2.9 itself should be deleted. The data contained in 2.9 is wrong (contrary to Red Cross instruction). If we are not going to revise this manual everytime the Red Cross changes then it should not be here	Concur. Refer to the Red Cross website.
John Lastowski		300-2.1.2.5	Added pointer to applicable section....not up-to-date with red cross requirements...value added?	See comment #45.
CDR Gelker		300-2.1.2.6	Discussion is that rescue "should" be performed using this procedure. If it is a procedure, it should be a requirement and wording changed to "shall."	Concur. Change is incorporated.
John Lastowski		300-2.1.2.6	Recommend changing to read "Requirements for Rescuing an electric shock victim:"	Concur. Change is incorporated.
John Lastowski		300-2.1.2.6.1	Recommend making text of paragraph 300-2.1.2.6 two sub-paragraphs. First sub-paragrpah will read "300-2.1.2.6.1 Principles:. The rescue of electric shock victims is dependent upon prompt removal from the source of shock and prompt administration of first aid. Personnel trained in safe removal of a victim from a source of electric shock and CPR procedures should perform this emergency procedure." Recommend deleting last sentence of original paragraph ("Administer first aid to an electric shock victim as follows:").	Concur. Change is incorporated.
John Lastowski		300-2.1.2.6.2	<p>Recommend an additional sub-paragraph to 300-2.1.2.6 spelling out requirements. "300-2.1.2.6.2 Requirements:"</p> <p>Change 300-2.1.2.6, now 300-2.1.2.6.2 a to read "Shut off the power to the current source immediately."</p>	Concur. Change is incorporated.

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John Lastowski		300-2.1.2.6.2	Delete this ref (see Section 300-2.9) if section is deleted.	See comment #45.
Dennis Neitzel		300-2.1.2.7	Add sentence to end of paragraph "Another product of an arc flash is the incident energy, which is a radiant energy and is expressed in calories per centimeter squared (cal/cm²). Studies have shown the 1.2 cal/cm² is the threshold of a second degree burn and 10.7 cal/cm² is the threshold of a third degree burn. One calorie is approximately equal to the hottest part of the flame from a cigarette lighter for one second. Therefore, there are two major hazards with an arc flash; 1) the arc temperature, and 2) the incident energy."	Concur. Change incorporated.
John Lastowski		300-2.1.2.7	Change distance from the source to 13 feet in last sentence.	Intent of comment incorporated.
Steven Burelson		300-2.1.2.7	Arc Flash -It was mentioned that due to the nature of our propulsion plants and how they are operated, Arc Flash Protection and Flash Protection Boundaries were not required for normal operation of a ckt bkr, nor is it required for 120V systems. This is not specifically mentioned anywhere in NSTM Ch. 300 and is contrary to the Corporate Safety Manual (CSM) Ch. C-6. While I realize that the fleet does not operate per the CSM, I foresee this leading to some confusion at the NPTUs where both the CSM and NSTM Ch. 300 are utilized. Also since this is new concept to much of the fleet I would recommend specifically outlining when Arc Flash precautions are to be taken, or when they are not required.	Concur. Added following to end of paragraph: "Arc flash protection is not required for routine operations and is required for specific electrical maintenance. If ship's force or repair activities conclude that the nature of work to be performed presents a higher risk of arc flash, these precautions shall be invoked."
Alan D. Finley		300-2.1.2.7	<b>Category:</b> Arc Flash <b>Comment:</b> Arc Flash and arc blasts have been defined but any additional requirements to be qualified to wear arc flash protective clothing has not been identified. <b>Recommendations:</b> Outline the training required in order to be qualified to wear arc flash PPE.	Do not concur. No change required.

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Alan D. Finley		300-2.1.2.7	<p><b>Category:</b> Arc Flash</p> <p><b>Comment:</b> Confusion is likely to exist between the arc flash requirements (NFPA 70E) in NSTM 300 and those used in the civilian sector with regards to the procedures for wearing arc flash protective clothing. Specifically, only non-melting clothing (the exception being elastic in socks and undergarments) be worn under arc flash clothing. Additionally, safety glasses are required to be worn under the face shield but there is no mention of this in NSTM 300.</p> <p>There does not appear to be any consideration being made for uniform items and their failure to meet NFPA 70E standards for arc flash.</p> <p>KSO and MTS utilize both NSTM 300 and civilian requirements and as such sailors work in areas where one or the other may govern. Allowing different standards to exist sends a conflicting message with regards to personnel safety.</p>	No action required.
Alan D. Finley		300-2.1.2.7	<p><b>Recommendations:</b> NSTM 300 should be consistent with NFPA 70E standards with regards to what makes up a set of arc flash protective clothing and the procedure for donning arc flash protective clothing. Change 12 cal/cm<sup>2</sup> and 40 cal/cm<sup>2</sup> designations to match the categories currently used in civilian industry (i.e. Cat 2 and Cat 4).</p> <p>Address the failure of current uniform items to meet NFPA 70E standards for arc flash.</p>	No change required.
Alan D. Finley		300-2.1.2.7	<p><b>Category:</b> Arc Flash</p> <p><b>Comment:</b> Evolutions requiring arc flash protective clothing and flash protection boundaries have not been specifically identified, beyond Tables 2-1 thru 22-3.</p> <p><b>Recommendations:</b> Specifically state which evolutions do and do not require arc flash precautions.</p>	See comment #54.
John Lastowski		300-2.1.2.8	In 4th sentence "completely penetrate" is ambiguous. Does it mean that shrapnel can go all the way through a body or does it mean that shrapnel will become fully embedded within a body?	Concur. Deleted "completely" from sentence.
Dennis Neitzel		300-2.1.2.9	Add "Arc" to Flash Protection Boundary throughout paragraph. And update Acronym to (AFPB). <u>arc</u> flash protection boundary (AFPB)	No change required.
Dennis Neitzel		300-2.1.2.9	Add "(1.2 cal/cm <sup>2</sup> )". The arc flash protection boundary (AFPB) defines the unobstructed distance from exposed energized circuits within an enclosure, which unprotected skin could receive a second degree burn <u>(1.2 cal/cm<sup>2</sup>)</u> , if an electrical arc flash were to occur.	No change required. Intent incorporated in previous section.

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Dennis Neitzel		300-2.1.2.9	After "All personnel, whether supervisors, technicians, operators or safety monitors, required to be within the FPB for initial voltage verification (IVV) or maintenance, shall wear the PPE identified in Table 300-2-1." add "Warning signs and barricades should be installed at this boundary in order to help protect others working in the area."	No change required.
Mark Klung		300-2.1.2.9	<p><i>Current Wording:</i>  <i>Additional information:</i>  <math>MVABF = 1.732 \times 4160 \times</math> (the symmetrical short circuit current limit of the affected protective device, e.g. circuit breaker, fuse).  <i>Recommended Change:</i>  Additional information:  <math>MVABF = \text{Phase Voltage (e.g. } 1.732 \times 4160) \times</math> the symmetrical short circuit current limit of the affected protective device (e.g. circuit breaker, fuse).  <i>Justification:</i>  MVABF can be defined for any voltage. As stated in the current revision it should be made clear that the values listed are an example used for 4160 volt circuits.</p>	Concur. Need to incorporate change in Appendix G.
CDR Gelker		300-2.1.2.9	Section discusses "requirements" which is different than guidance of the section. Again, clarification is needed.	Change is incorporated.
John Lastowski		300-2.1.2.9	Change paragraph name to "Flash Protection Boundaries (FPB)."	Change is incorporated.
John Lastowski		300-2.1.2.9	Recommend making text of paragraph 300-2.1.2.9.1 two sub-paragraphs, 300-2.1.2.9.1 Principles and 300-2.1.2.9.2 Requirements.	Change is incorporated.
NGSB- NN Department X31		300-2.1.2.9	<p>Health and Safety Manual states our arc flash boundaries are 4 ft for 600 VAC/800 VDC and less and 5 ft for greater than 600 VAC.</p> <p>b. The FPB distance has been calculated to be 4 feet for 450 volt circuits, <b>11 feet for 4160 volt circuits and 13 feet for 13.8 K volts</b>. An FPB of 11 feet is applicable to circuits with rated voltages from 1000 volts to 5000 volts, and 4 feet is applicable to circuits with rated voltages 1000 volts or less and 13 feet for voltages greater than 5000 volts. Solid structures such as bulkheads that are contained within the FPB form a barrier to propagation of the energy of an arc flash circuit to the structure. It is important to understand that personnel shall not be within the FPB without the appropriate PPE listed in Table 300-2-1.</p>	Change is incorporated.
PPEA		300-2.1.2.9 a	<p>a. Comment: In the second sentence, change "will remaining confined" to "will remain confined".</p> <p>b. Rationale: Editorial correction.</p>	Change is incorporated.
RPPY		300-2.1.2.9 a	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.



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CESWG		300-2.1.2.9 b	<p>Need to differentiate what level between voltages; FPB of 4' for 450 volts, 11' for 4160 volts and 13' for 13.8 K volts. This goes on to state that a FPB of 11' is correct for voltages from 1000 to 5000 volts and then states 4' is applicable for voltages 1000 volts and below. Which is it for 1000 volts? 4' or 11'. The same question arises with 11' and 13'. Does 11' apply to 5000 volts or 13' apply? Recommend something such as in remarks here.</p> <p>Solution: Changed to <math>\geq 30V</math> to <math>\leq 1000V</math> = 4 feet  <math>\geq 1001V</math> to <math>5000V</math> = 11 feet  <math>\geq 5001V</math> = 13 feet</p> <p>b. The FPB distance has been calculated to be 4 feet for <math>\geq 30</math> to <math>\leq 1000</math> volt circuits, 11 feet for 4160 volt circuits and 13 feet for 13.8 K volts. An FPB of 11 feet is applicable to circuits with rated voltages of <math>\geq 1000</math> volts to 5000 volts, and 4 feet is applicable to circuits with rated voltages of <math>\leq 1000</math> volts and 13 feet for voltages <math>\geq 5000</math> volts. Solid structures such as bulkheads that are contained within the FPB form a boundary ...</p>	Change is incorporated.
Gary Watson		300-2.1.2.9 b	<p>Need to differentiate what level between voltages; FPB of 4' for 450 volts, 11' for 4160 volts and 13' for 13.8 K volts. This goes on to state that a FPB of 11' is correct for voltages from 1000 to 5000 volts and then state 4' is applicable for voltages 1000 volts and below. Which is it for 1000 volts? 4' or 11'. The same question arises with 11' and 13'. Does 11' apply to 5000 volts or 13' apply? Recommend something such as in remarks here.</p> <p><i>Reveiw Action:</i> <math>\geq 30V</math> to <math>\leq 1000V</math> = 4 feet  <math>\geq 1001V</math> to <math>5000V</math> = 11 feet  <math>\geq 5001V</math> = 13 feet</p>	Comment incorporated.
Howard Snyder		300-2.1.2.9 b	<p>update to read "...to be 4 feet for <math>\geq 30</math> to <math>\leq 1000</math> volt circuits, 11 feet for 4160 volt circuits and 13 feet for 13.8 K volts. An FPB of 11 feet is applicable to circuits with rated voltages of <math>\geq 1000</math> volts to 5000 volts, and 4 feet is applicable to circuits with rated voltages of <math>\leq 1000</math> volts and 13 feet for voltages <math>\geq 5000</math> volts. Solid structures such as bulkheads that are contained within the FPB form a boundary to propagation of the energy..."</p>	See comment #71.
Jim Kaufman		300-2.1.2.9 c	does this apply to Thermal Imaging?	No change required.
John Lastowski		300-2.1.2.9.1	<p>300-2.1.2.9 Principles: change first sentence to read "The FPB defines..." and delete "an enclosure so that the sentence reads "energized circuits within which unprotected skin..."</p> <p>Additionally, the definition provided for FPB is not consistent with that provided by NFPA 70E.</p>	Change is incorporated. No additional change required.
John Lastowski		300-2.1.2.9.1 a	<p>Delete second sentence ("An electric arc is current flow through the air")</p> <p>Change second to last sentence to read "Electric arcs can be hot enough to cause an arc blast." and delete last sentence.</p>	Change is incorporated.

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John Lastowski		300-2.1.2.9.1 b	<p>Move old 300-2.1.2.9 d to new 300-2.1.2.9.1 b.</p> <p>b. The FPB is calculated using the following formula from ref (a), this formula is for information only and should not be used to calculate specific FPBs shipboard:</p> <p><b>FPB Distance: <math>D = [2.65 \times (MVABF) \times T]^{1/2}</math></b></p> <p><b>D</b> = the unobstructed Distance in feet from the exposed circuit to the arc flash boundary.</p> <p><b>MVABF</b> = the Bolted Fault capacity available at the point of the exposed circuit, in Mega Volt-Amps. <math>1.732 \times 4160 \times</math> (the symmetrical short circuit current limit of the affected protective device, e.g. circuit breaker, fuse).</p> <p><b>T</b> = the Time of arc exposure, in seconds. The elapsed Time measured from arc initiation to the point where the circuit protective device opens. For circuit breakers this time is comprised of the time for the breaker to open and the time delay due to the short circuit relay.</p>	See comment #63.
John Lastowski		300-2.1.2.9.2	Add 300-2.1.2.9.2 Requirements: after 300-2.1.2.9.1 b. Change old 300-2.1.2.9 b to 300-2.1.2.9.2 a.	Change is incorporated.
John Lastowski		300-2.1.2.9.2 a	<p>Recommend re-wording this section as follows:</p> <p>a. The FPB has been calculated to be 4 feet for 450 volt circuits, 11 feet for 4160 volt circuits, and 13 feet for 13.8 kilovolts. NAVSEA directs a FPB of 4 feet from circuits with rated voltages 1000 volts or less, 11 feet from circuits with rated voltages from 1000 volts to 5000 volts, and 13 feet for greater than 5000 volts.</p> <p>b. Solid structures such as bulkheads within the FPB distance may be used as barriers to arc flash. Access need not be limited on the far side of such barriers even though personnel may approach within the FPB distance because they are protected by the barrier."</p>	Change is incorporated.
CDR Gelker		300-2.1.3	Discussed "required" behaviors. Conflicts with "guidance".	Change is incorporated.
John Lastowski		300-2.1.3	Recommend making text of paragraph 300-2.1.3 two sub-paragraphs, 300-2.1.3.1 Principles and 300-2.1.3.2 Requirements.	Change is incorporated.
John Lastowski		300-2.1.3.1	Update to read "300-2.1.3.1 Principles: Individuals have a responsibility, not only to themselves, but also to their shipmates, to always be alert to detect and report unsafe work practices and unsafe conditions."	Change is incorporated.

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John Lastowski		300-2.1.3.2	<p>Old 300-2.1.3 lettered list becomes 300-2.1.3.2.</p> <p>Update 300-2.1.3.2 c to read "Stop any ongoing work and caution others to observe safety precautions if unsafe practices are observed."</p> <p>Update 300-2.1.3.2 d to read "Immediately report all electrical shocks and other injuries received to the appropriate supervisor..."</p> <p>Add 300-2.1.3.2 f "f. Personnel who are responsible for supervising an electrical safety related event must not allow themselves to be distracted, and must not participate in the event itself."</p>	Change is incorporated.
CESWG		300-2.1.4	<p>Add section for Definitions here</p> <p><i>Review Action:</i> 11-8-10 Added the entire section from CH-230 with slight modifications. Please review.</p>	No change required. Unnecessarily restrictive.
Howard Snyder		300-2.1.4	<p>Add new section "300-2.1.4 DEFINITIONS:" as follows:</p> <p>300-2.1.4 DEFINITIONS:</p> <p>1. Barricade. A physical obstruction (e.g., tapes, cones, or by location) to provide a warning about, and limit access to, a hazardous area. These items are installed temporarily while the work is going on.</p> <p>2. Boundary . A non-conductive physical obstruction (with insulating capability for the voltages involved) that is intended to prevent contact, either directly or inadvertently, with equipment or exposed energized components. Examples of materials could be rubber sheeting, matting (Note [1]) or other suitable insulating materials to protect or shield employees from exposed electrical hazards with insulating capability for the voltages involved.</p> <p>NOTE [1]: DO NOT USE insulated soles as an alternative to rubber insulated mats.</p>	No change required. Unnecessarily restrictive.
Howard Snyder		300-2.1.4	<p>3. Conductive Object/Surface. Any object that is capable of transmitting electrical energy.</p> <p>4. De-energized Circuit. A circuit free from an electrical connection to a source of potential difference and from any electrical charge (e.g., circuit breaker opened).</p> <p>5. De-energized Work. Any work performed on a circuit for which an Electrically Safe Work Condition has been established.</p>	No change necessary.

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Howard Snyder		300-2.1.4	<p>6. Electrical Approach Distance for Qualified Personnel. The distance from any energized exposed electrical conductor or circuit part that personnel and conductive objects must remain without using Electrical Safety Equipment precautions. (Note: electrical test lead are considered conductive objects).</p> <p>Voltage Distance</p> <p>&lt; 750V Plane of the Equipment *</p> <p>&gt; 750V &lt; 15kV 2 foot 2 inches (66cm)</p> <p>* Plane of the Equipment. The opening (plane) of an electrical component when the door is opened or cover is removed to allow internal access to the component. If an electrical component has electrical equipment on the door, then the plane is the arc formed by the door's edge as it swings open.</p> <p>7. Electrical Safety Equipment (ESE). Non-conductive equipment to protect personnel from electric shock and/or injury while performing work on a component and/or system that is not in an Electrically Safe Work Condition. (e.g., insulating blankets, matting, gloves, and sleeves made of rubber, certified tools, and proper personal protective equipment (PPE) and clothing, etc.).</p>	No change necessary.
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Howard Snyder	11	300-2.1.4	<p>8. Electrically Safe Work Condition (ESWC). A state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, tagged out, and an initial voltage verification (IVV) performed to verify the absence of voltage, and grounded if determined necessary.</p> <p>9. Energized Circuit. Electrically connected to or having a source of voltage. (e.g., circuit breaker closed, capacitors not discharged).</p> <p>10. Energized Work. Any work inside the approach distance of exposed electrical conductors or circuit parts that has a potential equal to or greater than 30 volts AC or DC.</p> <p>11. Equipment. A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like, used as a part of, or in connection with, an electrical connection that will utilize electrical energy.</p> <p>12. Exposed. Conductors, busses, terminals, or conductive metal objects that are un-insulated or are capable of being inadvertently touched so that a shock hazard exists for employees.</p>	No change necessary.
Howard Snyder		300-2.1.4	<p>13. Flame Resistant (FR). The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition sources.</p> <p>14. Flash Hazard. A dangerous condition associated with the release of energy (arc flash) caused by an electric arc.</p> <p>15. Flash Protection Boundary. Distance from exposed energized circuits within which a person could receive a second-degree burn if an electrical arc flash were to occur.</p> <p>16. Initial Voltage Verification (IVV). The voltage check performed after equipment or system isolation (lockout or tag out) to verify the absence of voltage.</p> <p>17. Non-Conductive Surfaces. Specifically designed and designated surfaces for electrical insulation (e.g., insulating and electrical rubber products, insulated electrical tools/work benches, etc.), provided the surfaces remain clean (i.e., free of oil, grease, liquids, etc.) and undamaged.</p>	No change necessary.

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Howard Snyder	11	300-2.1.4	<p>18. Non-qualified Worker. Personnel that have not been trained in this policy or in the safe operation, repair, or maintenance of cognizant equipment.</p> <p>19. Damaged Electrical Equipment. Equipment that is not or has not been left fully intact or assembled, and if turned on, will create an electrical hazard to personnel.</p> <p>20. Panelboard. A single panel or enclosure designed for containing buses and automatic over current devices, and electrical wiring, equipped with or without switches for the purpose of controlling light, heat, control or power circuits that are □ 30 volts; designed to be placed in or against a wall, partition, or other support; accessible only from the front.</p> <p>21. Qualified worker. A qualified worker is a trained technician that has the skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved with operation and maintenance of the equipment.</p>	No change necessary.
Howard Snyder	11	300-2.1.4	<p>a. For a person to be considered qualified; they must understand electrical hazards associated with the work. They must understand the use and limitations of PPE before selecting the necessary protective equipment. A qualified person must have the ability to recognize all electrical hazards that might be associated with the work being considered. A worker can be qualified to perform one work task and not qualified to perform a different task.</p> <p>b. In some cases a technician may have to demonstrate that they have the skills to perform the task. To accomplish this, the person has to demonstrate that they can perform the task. An example might be a mock-up or walkthrough using appropriate PPE for the task that will ensure that they can perform the work with the limitations of arc flash suit hood and of the properly rated rubber gloves with leather protectors.</p> <p>c. A qualified person must understand how to select appropriate test equipment and apply the equipment to the work task. They must be trained to understand and apply the details of the electrical safety program and procedures provided. They must be able to perform a hazard/risk analysis and to react appropriately to all hazards associated with the work.</p>	No change necessary.

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Howard Snyder		300-2.1.4	<p>d. Each supervisor and command must ensure that their personnel are qualified for the work assigned, this includes any additional training needed prior to conducting hazardous evolutions.</p> <p>22. Safety Frisk. Any voltage check, which is performed after the initial voltage verification to ensure that there has been no change in electrical status to the equipment since the equipment was last worked.</p> <p>23. Stray Voltage. Voltage present in an otherwise isolated circuit, which is not the result of a direct connection to an energized source (i.e. generator, battery, transformer, etc.). Other common terms used to describe stray voltage include: induced voltage, ghost voltage, and phantom voltage.</p> <p>24. Work. Defined as:  a) testing  b) calibrating  c) taking measurements  d) troubleshooting  e) repairing  f) assembling  g) disassembling  h) making adjustments.</p>	No change necessary.
John Lastowski		300-2.2	Consider re-locating by switching sections 2.1 and 2.2 that way electrical systems are discussed, followed by the need for electrical safety, followed by detailed safety requirements and exceptions. Also, clarifying in this section what are discussions and what are requirements.	Concur. Sections need to be switched.
Stephen Rourke		300-2.2.1.1	Could add: The "grounded path allows sufficient current flow to cause circuit over protection devices such as fuses or breakers to blow or trip thus de-energizing fault in equipment.	No change required.
John Lastowski		300-2.2.1.1	Recommend consolidating 300-2.2.1.1 through 300-2.2.1.3 into one paragraph "300-2.2.1.1 Principles". Move text from 300.2.2.1 to 300-2.2.1.1 and make old 300-2.2.1 through 300-2.2.1.3 lettered list a-c.	Agree with consolidated, but format as 300-2.2.1.1.1 - 300-2.2.1.1.3.
John Lastowski		300-2.2.1.1	Old 300-2.2.1.2 delete 'th' from 6000/6001 and 1/6001.	Change is incorporated.
PPEA		300-2.2.1.4	<p>a. Comment: In the sentence beginning "On metallic hulls ...", the implication that grounding is established by contact does not address the need for the contact to be on bright metal.</p> <p>b. Rationale: See MIL-STD-1310.</p>	No change required.

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John Lastowski		300-2.2.1.4	<p>Renumber paragraph to 300-2.2.1.2 and add paragraph title "Requirements". Add lettered list:</p> <p>a. Grounding metal cases, enclosures, doors, bases, frames, and structures. Metal enclosing cases, bases, frames, and structural parts of electrical equipment shall be grounded in accordance with MIL-STD-1310, <b>Shipboard Bonding, Grounding, and Other Techniques for Electromagnetic Compatibility, Electromagnetic Pulse (EMP) Mitigation, and Safety</b>, and MIL-E-2036, <b>Enclosures for Electric and Electronic Equipment, Naval Shipboard</b>.</p> <p>b. On metallic hull ships, such grounds can be provided by the fact that the metal enclosing cases or frames are in contact with one another and the metal structure of the ship.</p> <p>Where such grounding is not provided by the mounting arrangements (for instance, equipment supported on shock mounts or equipment mounted on a hinged door with voltage in excess of 30 volts), and on nonmetallic hull ships, ground connections should be provided to ground the case, enclosure, frame, enclosure, or support of all permanently installed electrical equipment and all mobile equipment normally used at a fixed location on the ship.</p>	Concur. Renumber to 300-2.2.1.4.1 - 300-2.2.1.4.7.
John Lastowski	43	300-2.2.1.5	<p>Delete paragraph number and continue lettered list in new 300-2.2.1.2 as follows:</p> <p>d. To ensure that all electrical equipment ground connections on shock-mounted equipment, equipment mounted on extruded double-faced and honeycomb metal joiner bulkheads, and on equipment mounted on nonmetallic structures on metallic and non-metallic hull ships are adequate and in good condition, each ground connection should be inspected at periodicity specified by PMS.</p> <p>e. A visual inspection shall be made to insure that a ground connection exists and that it is securely fastened with a good metal-to-metal contact.</p> <p>f. The resistance to ground should be less than 0.1 ohm as specified in MIL-STD-1310.</p>	See comment #97.
John Lastowski		300-2.2.1.5	In new 300-2.2.1.2 d-f, Add procedure to verify IAW MRC or RX I&C maintenance Manual, etc.	Change is incorporated.
Howard Snyder		300-2.2.1.5	Add paragraph heading "Miscellaneous equipment grounding."	No change required.
John Lastowski		300-2.2.1.6	<p>Delete paragraph number and continue lettered list in new 399-2.2.1.2 and update sentence to read as follows:</p> <p>e. Commercial off the shelf (COTS) equipment. COTS equipment with either metallic or non-metallic cases shall be grounded in accordance MIL-STD-1310 when installed onboard Naval ships.</p>	Editor's Note: If SEA 05Z agrees with J. Lastowski's comment, make old 300-2.2.1.6 item g on the lettered list, it was misslabeled in his comments. Change is incorporated.
CESWG		300-2.2.1.7	<p>300-2.2.1.7 Last Line: Grammar: equipment for improved personnel safety "than" (not over) a standard circuit breakers provide.</p> <p><i>Review Action:</i> 11-8-10 Done</p>	Fixed.



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Gary Watson		300-2.2.1.7	Last sentence is inaccurate. GFCI do not work on ungrounded electrical systems – shipboard. Too much capacitive reactance. Has this been proven to work on a ship or submarine electrical system?	No change required.
John Lastowski		300-2.2.1.7	Renumber paragraph to 300-2.2.1.3. Delete 'node' from first sentence.  Update to read an "ungrounded" not a "ungrounded"  Update last sentence to read "In addition, some ships incorporate Ground Fault Current Interrupt (GFCI) equipment for improved personnel safety over that which standard circuit breakers provide."	Change is incorporated.
John Lastowski		300-2.2.1.7	At least one ship class has a power system grounded through a resistance to limit over voltages that occur when cycling vacuum circuit breakers (VCBs) or during arcing ground faults. The magnitude of the ground fault current prohibits continued operation in the presence of a ground fault and the VCBs will trip to isolate the fault. This section should be clarified accordingly.	No change required.
RPPY		300-2.2.1.7	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
Howard Snyder		300-2.2.1.7	an "ungrounded" not a "ungrounded"; update last sentence to read "...improved personnel safety."; and add sentence to end of paragraph to read "The setting for a Class A- ground fault current interrupt (GFCI) is 6 mA."	No change required.
CESWG		300-2.2.1.7	300-2.2.1.7 Line 6: Grammar: Navy ships use "an" ungrounded... <i>Review Action</i> : 11-8-10 Done	Change is incorporated.
John Lastowski		300-2.2.1.8	Renumber paragraph to 300-2.2.1.4.	Change is incorporated.
Howard Snyder		300-2.2.1.8	Add paragraph heading "Receptacle outlets"	No change required.
CDR Gelker		300-2.2.15	Should be "300-2.2.1.5". Also discusses "should be inspected at periodicity specified by PMS." PMS is a requirement, so this is not guidance and wording changed to "shall be inspected."	Change is incorporated.
RPPY		300-2.2.15	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.

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NNSY Code 2330		300-2.2.2.2 I	On page 300-48 in paragraph 300-2.2.2.2(I), After the IVV is completed “if maintenance is secured and the de-energized equipment is left unattended” the requirement to verify equipment is still DANGER tagged is cumbersome and unnecessary since the formal work control system utilized at all naval shipyards will not allow the equipment isolation status to change without either the work being satisfactorily completed or technical evaluation of work status by engineering personnel. I agree that the STW checks need to be accomplished whenever maintenance is secured and the de-energized equipment is left unattended but in normal shipboard applications in naval shipyards the shop personnel accomplishing the work are not knowledgeable of the specific DANGER tags hung for equipment isolation (Code 246 or 2340 would know the specific tag-out).	Concur and modified.
John Lastowski		300-2.2.3	Recommend deleting quotation marks around real in first sentence and change to bold italicized text.	Change is incorporated.
Dennis Neitzel		300-2.2.3.1	Add megohmmeter and update Megger®. The resistances, when combined in parallel, form the insulation resistance of the system which is periodically measured with a 500 volt DC <u>megohmmeter (Megger®)</u> or installed ship’s active ground detector.	No change required.
John Lastowski		300-2.2.3.4	Delete semicolon in second sentence.	Fixed.
Howard Snyder		300-2.2.3.4	Delete “/” in “wye/delta”	Do not concur. Keep as written.
PPEA		300-2.2.3.5	a. Comment: This section should be changed to read similarly to “Some equipment installed onboard ships cannot tolerate the Type 1 electrical system specifications. TVSS can provide a level of protection, by suppressing voltage transients”. b. Rationale: The wording of this section is awkward and difficult to follow.	No change required.
John Lastowski		300-2.2.3.5	Delete 'electrical' from 3rd sentence 'electrical location' and 'detrimentally' from 5th sentence 'detrimentally reduce'	Change is incorporated.
Howard Snyder		300-2.2.3.5	"watch standards" not "watchstandards"	Change is incorporated.
Dennis Neitzel		300-2.2.3.6	Add “This can also be beneficial to operations and maintenance personnel from the arc flash hazard.” to end of paragraph.	Do not concur.
CLT Norman		300-2.2.3.6	Sentence should read “The AFD can sense pressure, gassing particles, and light to detect the onset of an arc.”	Change is incorporated.
John Lastowski		300-2.2.3.6	There is a lot of redundancy in 2.2.3.6 and 2.2.3.7. Recommend combining the paragraphs into one or splitting the wording up into subparagraphs of 2.2.3.6 (i.e. 300-2.2.3.6.1, 300-2.2.3.6.2, etc.)	Split into subparagraphs (300-2.2.3.6.1 and 300-2.2.3.6.2)

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John Lastowski		300-2.2.3.6	Additional explanation should be provided as to whether Arc Fault Detection (AFD) systems affect the fault clearing times and therefore the flash boundary.	Added: "AFD systems do not improve FPBs as they rely on existing clearing times of installed equipment while FPBs are based on available fault current and breaker clearing times. AFD systems provide protection upon re-energerizing a system whereas flash protection protects maintenance personnel while establishing maintenance conditions."
John Lastowski		300-2.2.3.6	Update to read "ADF systems" not "ADF" throughout paragraph.  Update 2nd sentence to read "...send a signal to open input power circuit breakers, thus..."  Update 5th sentence to read "...an electrical arc can be sustained at a lower current than the circuit breaker trip setpoint."  Update last sentence to read 'designated' not 'designed' and delete semicolon	Change is incorporated.
Jim Kaufman		300-2.2.3.7	define CTM	Spelled out. Change is incorporated.
CLT Norman		300-2.2.3.7	Sentence in 300-2.2.3.7 uses the abbreviation CTM without writing it out previously (identifying what it stands for).	Spelled out. Change is incorporated.
John Lastowski		300-2.2.3.7	should be a sub-paragraph (of 300-2.2.3.6) vice a new section.	Change is incorporated.
John Lastowski		300-2.2.3.7	Update to read paragraph title to read "ADF systems are usually separated into zones of protections."  In 3rd sentence delete 'sensors' and 'CTM'	Change is incorporated.
Howard Snyder		300-2.2.3.7	Add paragraph heading "AFD/CTM systems."	Change is incorporated.
CDR Gelker		300-2.2.4.1	Contains a warning. Why is this not discussed in a "warning" statement.	No change required.
John Lastowski		300-2.2.4.1	"ground (Point B)", which is shown in Figure 3002-2 is a confusing designation for the topic the figure is attempting to define. The figure is identifying an ungrounded system; Points A and C are designated as particular electrical phases. The electrical phase missing is B however; the hull (ground) is identified as Point B. This implies that electrical phase B is connected to the hull and therefore is grounded. Thus, this represents a grounded system vice an ungrounded system. Suggest labeling the electrical cables "Phase A" and "Phase B" and removing the letter designation "B" from the Ground (Ship's Hull).	Concur. Will make change.
John Lastowski		300-2.2.4.1	"NEVER TOUCH A LIVE CONDUCTOR" updated to bold text.	Change is incorporated.

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John Lastowski		300-2.2.4.1	300-2.2.4.1 and Figure 300-2-2 – Recommend making the conductors Point A and Point B and the ground Point G so it does not give the appearance of a three phase system.	Concur. Will make change.
RPPY		300-2.2.4.1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	See comment #134.
Dennis Neitzel		300-2.2.4.2	Update first sentence to read "Suppose you <u>perform a megohmmeter (Megger®) on</u> the system in Figure 300-2-2, part C and obtain a system value of insulation resistance of approximately 50,000 ohms."	No change required.
John Lastowski		300-2.2.4.2	Renumber paragraph to 300-2.2.4.1.1.	Change is incorporated.
John Lastowski		300-2.2.4.2	300-2.2.4.2 and figure 300-2-2c – Numbers are provided in the figure for system capacitance and insulation resistance, but no perspective is provided on what the numbers mean relative to electrical safety. Suggest adding such perspective (e.g, calculate the current resulting from this value of distributed capacitance, add a statement of whether the capacitance value stated is typical of what has been measured in a ship, explain more clearly that the current is due to the capacitance and the insulation resistance value has no relevance to the hazard.)	Change is incorporated with addition.
Howard Snyder		300-2.2.4.2	Add paragraph heading "False assumption."	No change required.
CDR Gelker		300-2.3	Contains items that are "requirements" and should be identified as such.	Change is incorporated.
John Lastowski		300-2.3	Update paragraph title to read "ELECTRICAL SAFETY REQUIREMENTS FOR EQUIPMENT MAINTENANCE"	Change is incorporated.
John Lastowski		300-2.3	Insert WARNING following paragraph " <b><u>WARNING</u></b> <b><u>Work on energized systems 1000 volts or greater is prohibited unless approved by NAVSEA.</u></b> "	Change is incorporated.
Howard Snyder		300-2.3	Update section heading to read "GENERAL ELECTRICAL SAFETY..."	No change required. See comment #141.
CESWG		300-2.3.1	Last Line: Necessary to work on energized equipment, the requirements of Section "300-2.4" (delete the .3, requirements of all of section 300-2.4 should be used). <i>Review Action:</i> 11-8-10 Done	Deleted.
John Lastowski		300-2.3.1	Recommend moving text paragraph to after start of 300-2.3.1.1 and delete WARNING.	Change is incorporated.
John Lastowski		300-2.3.1.1	Re-look at words in REV 7	Deleted.
Dennis Neitzel		300-2.3.1.1	Add "i. Cleaning and lubrication of moving parts."	Change is incorporated.

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John Lastowski		300-2.3.1.1	<p>Add paragraph title "Precautions:"</p> <p>Format body of paragraph as lettered list with text from old 300-2.3.1 as item a. Reword a last two sentences of a to read De-energized equipment shall be tagged out in accordance with <b>ref (b)</b> and verified de-energized using Initial Voltage Verification (IVV) checks prior to maintenance. <b>If it is necessary to work on energized equipment, the requirements of Section 300-2.4 shall be followed.</b></p>	Change is incorporated.
John Lastowski		300-2.3.1.1	<p>Update lettered list items as follows:</p> <p>"f. Assembling/Disassembling equipment or associated sub-components."</p> <p>"g. Installation/Removal of equipment or associated sub-components."</p> <p>"h. Making adjustments to electrical equipment."</p> <p>Add lettered list item as follows:</p> <p>"i. Cleaning and inspection of electrical equipment."</p>	Change is incorporated.
John Lastowski		300-2.3.1.1	<p>Update warning to read "<b><u>WARNING</u></b> <b>Intentional shocks are prohibited.</b>" and consider adding to voltage checks sections.</p>	Change is incorporated.
Howard Snyder		300-2.3.1.1	Add paragraph heading "Equipment maintenance."	Change is incorporated.
Dennis Neitzel		300-2.3.1.2	<p>Updated paragraph to read "Authorized <b><u>and Qualified</u></b> personnel only. Because of the danger of shock, electrocution, arc flash or arc blast, fire, damage to material, and injury to personnel, no person <b><u>shall</u></b> be assigned to operate, repair, or adjust electrical or electronic equipment unless that person <b><u>qualified and</u></b> has demonstrated knowledge of its operation and repair and of all applicable safety regulations. Then and only then, when authorized by the responsible department head, <b><u>shall the qualified worker</u></b> be permitted to work on the equipment."</p>	Change is incorporated.
John Lastowski		300-2.3.1.2	<p>Add paragraph title "Requirements". Change formatting of paragraph to lettered list. Text of old 300-2.3.1.2 is 'a.' Update last sentence to read "Then and only then, when authorized by the Commanding Officer or designated representative, should they be permitted to work on the equipment."</p>	Change is incorporated.
John Lastowski		300-2.3.1.3	<p>300-2.3.1.3 and 300-2.3.1.4 are combined and become lettered item 'b.' in 300-2.3.1.2. Item b will read "b. Protective enclosure safety. During normal operations all fuse boxes, junction boxes, switch boxes, electrical enclosures, and wiring accessories shall be kept closed and properly secured. Personnel shall not open electrical enclosures or expose energized conductors without taking the applicable precautions of <b>Section 300-2.4.3 or unless approved by applicable maintenance instructions.</b>"</p>	Changed to:

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Dennis Neitzel		300-2.3.1.4	Update paragraph to read "Personnel shall not reach within or enter energized electrical or electronic equipment enclosures <u>unless they are qualified and take</u> the applicable precautions of Section 300-2.4.3."	No change required.
CESWG		300-2.3.1.4	300-2.3.1.4 Last Line: Electronic equipment enclosures without taking the applicable precautions of Section "300-2.4" (delete the .3, precautions are all through 300-2.4, not just 300-2.4.3). <i>Review Action:</i> 11-8-10 Done	Deleted.
CLT Norman		300-2.3.1.4	Recommend it read "...without taking the applicable precautions of Sections 300-2.4.2 and 300-2.4.3" This ensures correct permission received also.	Fixed.
Dennis Neitzel		300-2.3.1.5	Add text to last sentence as follows: "...and then only <u>by qualified workers</u> with the Commanding Officer's approval."	No change required. Already stated.
Johnathan Gatliff		300-2.3.1.5	Overriding Interlocks needs Commanding Officers Permission. There is not a statement that says something about unless delegated by a higher authority, i.e. applicable MRC. Has anyone looked at applicable MRC's to verify there is a step in the procedure to obtain Commanding Officers permission? Is this something that is necessary on the PMS cards?	Updated.
NNSY Code 2330		300-2.3.1.5	On page 300-37 in paragraph 300-2.3.1.5 is approval of the overhaul work package sufficient? (See 300-2.4.2)	No change required.
John Lastowski		300-2.3.1.5	Becomes lettered item 'c.' in 300-2.3.1.2.	Change is incorporated.
Dennis Neitzel		300-2.3.1.6	Add text to last sentence as follows: "In addition, safeguard circuits shall not be modified, <u>except by a qualified worker with</u> specific authority from the respective systems command.	No change required. Defined as a higher requirement.
John Lastowski		300-2.3.1.6	Becomes lettered item 'd.' in 300-2.3.1.2. Delete parenthetical statement in sentence 1.	Change is incorporated.
Howard Snyder		300-2.3.1.6	Add paragraph heading "Safety devices."	No change required.
CDR Gelker		300-2.3.2	Discusses "general precautions" but some of these are procedures and should be "requirements." Clarification is needed. If not a requirement, why are these not discussed in "warning" statements.	Change is incorporated.
CLT Norman		300-2.3.2	300-2.3.2 is lettered incorrectly. The letter "o" has been skipped. Also, there is an extra space in "explosion proof" in letter "l."	Change is incorporated.

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John Lastowski		300-2.3.2	<p>Becomes lettered item 'e.' in 300-2.3.1.2. Change paragraph title to title case "General Requirements." Also update 1st sentence to read "The following list is provided to alert all personnel to some general electrical safety requirements which always apply:"</p> <p>Old 300-2.3.2 lettered list a. - q. becomes numbered list 1- 16. Sub items under old q. now 16. become lettered items a. and b.</p> <p>Add item 17 to numbered list "Never open a disconnect link in an electrical system under load unless approved by NAVSEA guidance such as MRCs or technical manuals. Typical disconnect links are not designed to dissipate arcs generated when interrupting system current when the link is opened under load and could result in personnel injury or equipment damage." Also, Evaluate adding words about current threshold where it would be OK.</p>	Change is incorporated.
John Lastowski		300-2.3.2	Many local commands have precautions associated with use of portable test leads on circuits greater than 300V...do we need to add guidance here?	No change required.
RPPY		300-2.3.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	No change required.
Alan D. Finley		300-2.3.2	<p><b>Category:</b> General Precaution Reminders</p> <p><b>Comment:</b> Contrary to the KSO F-10 Supplement, MTS F-10A and NPS A-3 manual, there is not a precaution regardgin the use of portable test leads on circuits greater than 300V.</p> <p><b>Recommendations:</b> This resides in many local instrucionts but has no real source. It sends a mixed message when a precaution such as this is not included in NSTM 300.</p> <p>If this is valid "precaution" it should be added to NSTM 300 and deleted from local instructions.</p>	No change required.
Dennis Neitzel		300-2.3.2 a	Add test to sentence as follows: "Do not touch a conductor, until it is verified de-energized <u>by a qualified worker.</u> "	No change required.
John Lastowski		300-2.3.2 c	Update old 300-2.3.2 c to read "3. Tag-out procedure shall be in accordance with ref (b).	Change is incorporated.

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SUBPAC N4		300-2.3.2 i	<p>a. This section states, "Wear rubber gloves when using metal-cased portable electric equipment, or when using electric handheld portable tools in hazardous conditions, such as wet decks and bilge areas."</p> <p>b. This could be interpreted as requiring rubber gloves whenever metal-cased portable electric equipment is used. Strict interpretation of the article as written could result in burdensome work practices like requiring rubber gloves while taking a portable air sample. The article should be edited to clearly state the intent to require the use of rubber gloves during hazardous conditions.</p> <p>c. <b>Recommend</b> rewriting 300-2.3.2.i as, "Wear rubber gloves when using metal-cased portable electric equipment or electric handheld tools in hazardous conditions (e.g., wet decks, bilge areas) ."</p>	Change is incorporated.
Dennis Neitzel		300-2.3.2 i and global	Change text to read "rubber insulating gloves" and "Leather protector gloves" throughout paragraph.	Change is incorporated.
John Lastowski		300-2.3.2 n	Old 300-2.3.2 n Consider re-wording as follows: Do not join extension cords longer than 25 feet together and never join more than two. Single length extension cords up to 100 feet long are permissible."	Change is incorporated.
John Lastowski		300-2.3.2 p	Delete repeated 'v' in 'voltmeter'	Change is incorporated.
Dennis Neitzel		300-2.3.3	<p>After "which requires multiple breakers or switches to be opened and/or multiple fuses to be removed." add sentence "<u>Where this process requires contact with energized or potentially energized components such as fuses, it shall be performed by qualified workers only.</u>"</p> <p>Update 6th sentence to read "<u>A qualified worker shall perform</u> IVV checks, Section 300-2.5.1-3,..."</p> <p>After "ensure that it is completely de-energized before maintenance begins." add sentence "<u>Always test the meter for proper operation immediately before and after the circuit test for deenergized condition.</u>"</p>	No change required.
CESWG		300-2.3.3	<p>Line 7: switchboard, the entire switchboard shall be "isolated per TUM [or reference number]" (delete danger tagged, could be interpreted as the switchboard requiring danger tags on the switchboard itself).</p> <p><i>Review Action:</i> 11-8-10 Done</p>	No change required.
CESWG		300-2.3.3	<p>Line 9: This paragraph is the first place that "IVV" is discussed. "Perform IVV checks, Section 300-2.5.1-3..." If IVV is not defined anywhere, this is a new term for sailors, this should be spelled out. Should read "Perform Initial Voltage Verification (IVV) checks..."</p> <p><i>Review Action:</i> 11-8-10 Done</p>	Change is incorporated.



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Gary Watson		300-2.3.3	I believe that is paragraph is the first place that "IVV" is placed. Found in the 3rd sentence from the end of the paragraph. "Perform IVV checks, Section 300-2.5.1-3..." If IVV is not defined anywhere, this is a new term for sailors, this should be spelled out.	Change is incorporated.
Dwayne Wood		300-2.3.3	1. Paragraph 300-2.3.3 states an entire switchboard shall be tagged out when performing maintenance in the switchboard and individual compartment isolation is not authorized (seems to relate to an earlier critique here for C246 on a SSN). a. Section would be clearer if it discussed (and allowed isolating) switchboard sections that were physically separate and isolable. b. For example on CVNs, Load Center 42C can be isolated separate from Load Center 42A/42B with no additional risk to personnel or equipment.	No change required.
Jeffery Watson		300-2.3.3	When performing work on a switchboard, the entire switchboard shall be danger tagged. Individual compartment isolation is not authorized for work/maintenance.  (need to clarify this section to allow for isolation of SWBDS or load centers that are designed to be isolated individually such as the rod drive board , LC 41C, 42C, etc. or 450V E boards 1EA & 1EB from 1E)( This also states that entire SWBD is to be de-energized vice only the associated breaker cubicle which would require many additional tags as well as unnecessarily de-energizing equipment i.e. TG Space Heaters.)	Change is incorporated.
PPEA		300-2.3.3	a. Comment: This section should address the unusual condition with respect to SABT's by referencing ahead to section 300-2.3.3.5. b. Rationale: The atypical properties of the tag-out procedure for SABT with isolation switches provides sufficient hazard to warrant specific attention in this paragraph.	Change is incorporated.

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John Lastowski		300-2.3.3	Add paragraph to read as follows: "300-2.3.3 Battery Well Electrical Safety Requirements. The batteries in a modern submarine can release up to several thousand kilowatts of electrical energy. Any failure in the electrical equipment or circuits that releases this energy without direction may cause extremely rapid heating, melting of conductors and fires. Follow all precautions of NSTM, Chapter 223 for Battery well work. Follow the specific electrical safety requirements of Section 223-9.2.5 of NSTM Chapter 223 and the applicable maintenance instructions contained within MRCs, technical manuals, and applicable system operating manuals regarding shipboard batteries. As battery related work presents the same risk as energized work, the risk associated with the nature of the battery work being performed should be considered and the energized work requirements of section 300-2.4 applied as necessary beyond those requirements specified in NSTM Chapter 223. Under no circumstances should battery work be conducted when current is flowing from the battery."	Change is incorporated.
John Lastowski		300-2.3.3	Recommend updating paragraph number to 300-2.3.4 and Updating paragraph title to read "Equipment Isolation"	Change is incorporated.
John Lastowski		300-2.3.3	Moved the following sections from "Working on de-energized equipment" section to this section on general electrical safety precautions...doesn't seem to fit here...consider making a new section.	No change required.
Howard Snyder		300-2.3.3	Update to read "...switchboard shall be isolated per TUM. Individual compartment isolation is not authorized for work/maintenance. Perform Initial Voltage Verification (IVV) checks..."	Added reference.
Paul Mieszczanski		300-2.3.3 and 2.3.3.4	300-2.3.3 EQUIPMENT TAG-OUT PROCEDURES. Safety from electrical hazards can be ensured by completely de-energizing equipment on which work is to be done. {MOVE FROM 2.3.3.4 to here: Electrical systems only require a single isolation point in each conductor isolation path for example; open circuit breaker, remove fuses, disconnected plugs/wires, or air gaps for power electronics (ex., power conversion modules (PCM) and static automatic bus transfer devices (SABT)).} Electrical equipment should be de-energized by opening the power supply circuit breaker or switch, unplugging where applicable and/or removing the appropriate fuses. ... REASON: This sentence applies to all types of electrical isolations; therefore, it is a better fit here than in "Dead front fuses".	Restructured based on comments.
John Lastowski		300-2.3.3.	"closing spring for ACB circuit breakers is optional" - These are legacy words that require clarification..."closing springs should be discharged in accordance with system or equipment manuals prior to work on the associated circuit wherever possible."	Change is incorporated.

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John Lastowski		300-2.3.3.1	Delete paragraph.	Concur. Deleted paragraph.
Howard Snyder		300-2.3.3.1	Update last sentence to read "...accordance with Paragraph 300-1.2.8 ref (b)."	Deleted paragraph.
Stephen Rourke		300-2.3.3.2	Discharging ACB breakers should not be optional when danger tagging unless control power is also secured.	Change is incorporated.
John Lastowski		300-2.3.3.2	Change paragraph number to 300-2.3.4.2. Old paragraphs 300-2.3.3.3 - 300-2.3.3.5 become lettered list under new 300-2.3.4.2. Add paragraph title "Discussion:" Text from paragraph becomes lettered list item a.	Change is incorporated.
Paul Mieszczanski		300-2.3.3.2 and FIGURE 300-2-3	300-2.3.3.2 Circuit breaker clips and fuse plugs. DANGER tags may be augmented by the use of additional safety measures such as replacing dead-front fuses with insulated fuse plugs, locking {REPLACE locking with blocking.} AQB type circuit breaker handles, or discharging the closing spring for ACB type circuit breakers in accordance with the applicable technical manual. Use of these clips and discharging the closing spring for ACB circuit breakers is optional and is covered in ref (b). Examples of common circuit breaker clips for locking{REPLACE locking with blocking.} circuit breaker handles to prevent accidental operation are shown in Figure 300-2-3. FIGURE 300-2-3 Circuit Breaker Clips/Locks {REPLACE locks with covers.} REASON: NSTM 300 Rev 7 & TUM do not use the term locks, TUM mentions them as clips/covers. The "Clips/Covers" are not locks per OSHA 1910.147, 1910.269, & especially not per draft 1915.80 definitions and draft 1915.89 LO/T-P.	Change is incorporated. Figure 300-2-3 will be updated to change "lock" to "block".
Paul Mieszczanski		300-2.3.3.2 and FIGURE 300-2-3	"Clips/Covers" are commonly referred to as Lockouts or Blockouts in Safety Lockout/Tagout Catalogues. Discussions with SEA 04R (Adams) IRT what OSHA considers as locks reveals that the locking device requires a key or special tool(s) to install and remove, which is not the case with cotter pins and screws.	Change is incorporated.
John Lastowski		300-2.3.3.3	Paragraph becomes lettered item 'b.' under new 300-2.3.4.2. Update to read "b. Safety-related items used for electrical maintenance should be stocked and readily available. For a list of safety related items for electrical and electronic maintenance and repair, see <b>Appendix 300-I</b> ." - Removed from table 300-2-1 and placed in APP I.	Change is incorporated.
CESWG		300-2.3.3.4	Line 3: Grammar: ...a single isolation point in each conductor isolation "path. For example..." <i>Review Action:</i> Not in my copy	Change is incorporated.
PPEA		300-2.3.3.4	a. Comment: The expression "single isolation point" could be misinterpreted to mean one side of the circuit. This statement should clearly address cases with L1/L2 fuses. b. Rationale: Delta configured power systems are "hot" on all legs of the circuit.	Change is incorporated with modifications.

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John Lastowski		300-2.3.3.4	Paragraph becomes lettered item 'c.' under new 300-2.3.4.2.	Change is incorporated.
John Lastowski		300-2.3.3.4	Discuss use of grounded vs. ungrounded test equipment.	Change is incorporated in Section 300-2.3.1.1 under Warning.
John Lastowski		300-2.3.3.4	NSN 9Z 6250-01-497-5783 - Add part number in addition of NSN  Currently NSN 9Z 6250-01-497-5783 is listed as the only insulated fuse plugs that shall be used. Allow additional equivalent styles of fuse plugs. These may be as simple as a fuse holder with the internals removed or any other device constructed to an Engineering drawing	Do not concur. Stock number is sufficient because it can't be cross-referenced to a part number.
John Lastowski		300-2.3.3.4	d. Electrical systems only require a single isolation point in each conductor isolation path for example; open circuit breaker, remove fuses, disconnected plugs/wires, or air gaps for power electronics (ex., power conversion modules (PCM) and static automatic bus transfer devices (SABT)). - The last sentence does not have anything to do with dead front fuses. Why is it here? Relocate to section 300-2.3.3.1?	No change required.
RPPY		300-2.3.3.4	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	
Steven Burelson		300-2.3.3.4	Dead Front Fuses -Currently NSN 926250-01-497-5783 is listed as the insulated fuse plugs that shall be used. Recommend allowing additional equivalent styles of fuse plugs. These may be as simple as a fuse holder with the internals removed or something per an Engineering drawing.	See comment #201.
Alan D. Finley		300-2.3.3.4	<b>Category:</b> Dead Front Fuses <b>Comment:</b> Currently NSN 9Z 6250-01-497-5783 is listed as the only insulated fuse plugs that shall be used. <b>Recommendations:</b> Allow additional equivalent styles of fuse plugs. These may be as simple as a fuse holder with the internals removed or any other devices constructed to an Engineering drawing.	See comment #201.
Paul Mieszczanski		300-2.3.3.4 and 2.3.3	300-2.3.3.4 Dead front fuses. Removable fuse holders/carriages shall be removed and the fuse holder receptacle taped over or covered with insulated fuse plugs (NSN 9Z 6250-01-497-5783) installed in place of the fuse holder. {MOVE to 2.3.3: Electrical systems only require a single isolation point in each conductor isolation path for example; open circuit breaker, remove fuses, disconnected plugs/wires, or air gaps for power electronics (ex., power conversion modules (PCM) and static automatic bus transfer devices (SABT)).} REASON: See paragraph 2.3.3 5 (Comment 2)	See comment #201.
Jim Kaufman		300-2.3.3.5	some ships have additional disconnect switches installed for SABTs. In such installations both sources need not be de-energized (ref SCD 4966 and CVN 70/77 installs)	Change is incorporated.

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Jeffery Watson		300-2.3.3.5	<p>Silicon controlled rectifiers (SCR) as electrical isolation. SABTs use SCR vice mechanical contacts to provide dual power supplies to individual loads. A potential electrical safety hazard exists when working on SABT feeders due to current leakage between the normal and alternate sources through these SCRs. When performing maintenance on either source (i.e., supply load centers) or when working on equipment downstream of the SABT, ships shall secure and danger tag both the normal and alternate power sources to the SABT. If the normal and alternate power supply cannot be secured due to operational commitments, the equipment must be considered energized, and the applicable precautions of section 300-2.4.3 for work on energized equipment shall be followed.</p> <p>(We agree with this but nothing identifies what type of ABT is being fed by sources. May need a warning to shipcheck ABTs' to determine if it is a SABT as there is no drawing that currently identifies the type of ABT in use)</p>	No change required. Name plate should identify SABT or an ABT.
PPEA		300-2.3.3.5	<p>a. Comment: This section should address the fact that without SABT isolation switches, the SABT can feed-through to the load side of feeder breakers.</p> <p>b. Rationale: The atypical properties of the tag-out procedure for SABT without isolation switches provides sufficient hazard to warrant specific attention in this paragraph.</p>	Change is incorporated.
John Lastowski		300-2.3.3.5	Delete paragraph.	Change is incorporated.
SUBPAC N4		300-2.3.3.5	<p>a. This section discusses the use of silicon controlled rectifiers (SCR) as electrical isolations, and directs, "When performing maintenance on either source (i.e., supply load centers) or when working on equipment downstream of the SABT, ships shall secure and danger tag both the normal and alternate power sources to the SABT. If the normal and alternate power supply cannot be secured due to operational commitments, the equipment must be considered energized, and the applicable precautions of section 300-2.4.3 for work on energized equipment shall be followed." Common practice to isolate SABTs for maintenance is to pull an SCR bank out of the circuit, which does not require securing the alternate power source to the SABT. This practice is less intrusive than securing and tagging both the normal and alternate power supply to the SABT.</p> <p>b. <b>Recommend</b> changing the last sentence quoted above to, "If the normal and alternate power supply cannot be isolated, the equipment must be considered energized, and the applicable precautions of section 300-2.4.3 for work on energized equipment shall be followed."</p>	Change is incorporated.

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CDR Gelker		300-2.3.4	"Qualified worker" has no discussion of an actual "qualification" process such as PQS. This needs to be clearly defined in order to ensure a standard level of knowledge across the fleet.	NSTM does not define qualification processes. Document outlines general qualification topics.
John Lastowski		300-2.3.4	Renumber paragraph to 300-2.3.5, renumber subsequent paragraphs. QUALIFIED WORKER & WARNING SIGNS should be capitalized (formatting throughout revision).	Change is incorporated.
John Lastowski		300-2.3.4	Introduces the concept of a qualified worker, but does not address the training or process for determining the level of qualification. Introduce some means for determining to what level a technician is qualified.	See comment #212.
Alan D. Finley		300-2.3.4	<b>Category:</b> Qualified Worker <b>Comment:</b> Introduces the concept of a qualified worker, but does not address the training or process for determining the level of qualification. <b>Recommendations:</b> Introduce some means for determining to what level a technician is qualified.	See comment #212.
Alan D. Finley		300-2.3.4	<b>Category:</b> Energized Circuit Working Procedures <b>Comment:</b> Step m. (3) specifies the use of non-conductive grab sticks but does not explain how this piece of equipment is to be used. <b>Recommendations:</b> There should be clarification and guidance with regards to the use of this equipment.	No change required. Consistent with explanation of use of rope.
Howard Snyder		300-2.3.4 - 300-2.3.4.4	Place paragraphs in new section under Para 300-2.1.4s and update numbering to subsequent paragraphs.	No change required, restructured based on other comments.
John Lastowski		300-2.3.4.1	Add subparagraph to 300-2.3.4 (Old 300-2.3.3). Paragraph from 300-2.3.4 moved to new 300-2.3.4.1. Paragraph will read: "300-2.3.4.1 Requirements: Safety from electrical hazards can be ensured by completely de-energizing equipment on which work is to be done."	Change is incorporated.
John Lastowski		300-2.3.4.1 a	Add lettered list: a. Electrical equipment should be de-energized by opening the power supply circuit breaker or switch, unplugging where applicable and/or removing the appropriate fuses in accordance with <b>REF (b)</b> . Some equipment has more than one source of power, which requires multiple breakers or switches to be opened and/or multiple fuses to be removed.	Change is incorporated.
John Lastowski		300-2.3.4.1 b	b. Danger tags are hung on these circuit breakers, switches, fuses and receptacle plugs to indicate that the circuit has been isolated for maintenance.	Change is incorporated.
John Lastowski		300-2.3.4.1 c	c. When performing work on a switchboard, the entire switchboard shall be danger tagged. Individual compartment isolation is not authorized for work/maintenance.	Change is incorporated.

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John Lastowski		300-2.3.4.1 d	d. Static Automatic Bus Transfer (SABT) switches. SABTs use silicon controlled rectifiers (SCRs) vice mechanical contacts to provide dual power supplies to individual loads. A potential safety hazard exists when working on equipment connected to SABT switches in some ships due to leakage current between the normal and alternate sources through these SCRs. When performing electrical maintenance or troubleshooting on either power source connected to an SABT switch, or when working on equipment downstream of the SABT switch, ships shall secure and DANGER tag open both the normal and alternate sources of power to the SABT. If it is not possible to secure both sources of power to the SABT, then the equipment must be considered energized, and the applicable precautions of <b>Section 300-2.4.3</b> for work on energized equipment shall be observed. Some ships are equipped with disconnect switches on the SABT normal and alternate feeder circuits, or have removable SCR assemblies. These SABT design features create a sufficient physical air gap that allows for electrical isolation. These ships can open and DANGER tag the disconnect switch,	Change is incorporated.
John Lastowski		300-2.3.4.1 d	or remove the non-active SCR assembly, when working on the upstream switchboard while the SABT and load remain energized from the other power source.	Change is incorporated.
John Lastowski		300-2.3.4.1 e	e. Perform Initial Voltage verification (IVV) checks per <b>Section 300-2.5.1</b> , on the equipment with a properly rated voltmeter to ensure that it is completely de-energized before maintenance begins. Performing IVV checks is an exception to work on energized equipment. Work on energized equipment, is covered in <b>Section 300-2.4.3</b> .	Change is incorporated.
Dennis Neitzel		300-2.3.4.2	Add ", to a qualified worker," to first sentence "In some cases a technician may have to demonstrate, <u>to a qualified worker</u> , that they have the skills to perform the task."  Change last sentence to read " <u>w</u> /hood" and "rubber <u>insulating</u> gloves".	Change is incorporated with modifications.
John Lastowski		300-2.3.4.2	Delete second sentence ("To accomplish this, the person has to demonstrate that they can perform the task")	Change is incorporated.
John Lastowski		300-2.3.5	Renumber paragraph to 300-2.3.6. Capitalize paragraph title QUALIFIED WORKER & WARNING SIGNS should be capitalized (formatting throughout revision).  The requirements for posting warning signs are specific, but the wording is general in nature. - Reference applicable sections.	Change is incorporated.
John Lastowski		300-2.4	Rename section "ENERGIZED WORK"	Change is incorporated.

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John Lastowski		300-2.4	<p>Insert two WARNINGS following paragraph:</p> <p><b><u>WARNING</u></b>  <b>Work on energized systems 1000 volts or greater is prohibited unless approved by NAVSEA.</b></p> <p><b><u>WARNING</u></b>  <b>Due to the additional risk of coming in contact with energized equipment, additional energized work controls should be considered if the equipment is in a hard to access area, high sea states exist, etc.</b></p>	Change is incorporated.
Dennis Neitzel		300-2.4.1	Add sentence after paragraph heading " <u>Working on energized equipment shall be accomplished by qualified workers only.</u> "	Do not concur, already covered in earlier section.
CLT Norman		300-2.4.1	Recommend third sentence read "Equipment technical manuals or approved drawings shall be ..."	Change is incorporated.
John Lastowski		300-2.4.1	Rename paragraph "DE- ENERGIZED EQUIPMENT PRIOR TO WORK."	Change is incorporated.
John Lastowski		300-2.4.1	Text from paragraph becomes new 300-2.4.1.1 Principles, old 300-2.4.1.1 is renumbered to 300-2.4.1.2 Requirements.	Change is incorporated.
Howard Snyder		300-2.4.1	Move sentence to beginning of paragraph from 300-2.4.1.4. Add sentence to beginning of the paragraph "Energized work, in particular, should always be viewed and planned with additional risk mitigation."	The intent of this comment is incorporated.
Howard Snyder		300-2.4.1.1	Add paragraph heading "Maintenance evolution planning."	Change is incorporated.
John Lastowski		300-2.4.1.1	<p>Format paragraph as lettered lists as follows:</p> <ul style="list-style-type: none"> <li>a. Safety from electrical hazards during work can best be ensured by completely de-energizing equipment. De-energized equipment shall be tagged out in accordance with ref (b).</li> <li>b. Equipment technical manuals and/or electrical system drawings shall be referenced for additional requirements and technical details associated with specific component designs. Those technical details arm maintenance personnel and operators with the information they need to assess risk and determine how to apply the principles contained below in addition to equipment specific requirements. When provided, applicable maintenance procedures and operating instructions shall be used when performing work.</li> <li>c. Operating manuals and system manuals shall not be used as the sole source for equipment isolation.</li> </ul>	Change is incorporated.



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John Lastowski		300-2.4.1.1	<p>Renumber paragraph to read 300-2.4.1.2 and add title "Requirements:"</p> <p>Reformat paragraph as lettered list to read:</p> <p>a. In planning any electrical maintenance evolution, the responsible activity shall conduct a review of all governing documents to ensure that the specific risks associated with the maintenance evolution are fully understood by all maintenance personnel and their supervisors and that appropriate risk mitigation steps are in place to ensure personnel and equipment safety.</p> <p>b. Supervisors must ensure all maintenance personnel understand the physical orientations and characteristics of electrical hazards present and the work isolation boundaries established to support personnel safety.</p>	Change is incorporated.
John Lastowski		300-2.4.1.2	Renumber paragraph to 300-2.4.1.3 and add title "ENERGIZED WORK PLANNING."	Change is incorporated.
John Lastowski		300-2.4.1.2	Text from paragraph becomes new "300-2.4.1.3.1 Principles:" and text is formatted as lettered list item a. and delete first sentence.	Change is incorporated.
NGSB- NN Department X31		300-2.4.1.2	<p>Energized work and testing are considered different with the respects to an energized circuit watch and Energized work Request Form.</p> <p>Health and Safety Manual Defines:</p> <p>Electrical Testing - Entry into an energized electrical/electronic enclosure, cabinet, chassis, piece of equipment or system where the express purpose is to inspect or perform electrical measurements, adjust, align or otherwise use test equipment, probes and/or adjusting or aligning devices that are insulated and non-conductive, and the replacement of circuit boards, relays, fuses, etc., where the equipment is designed to have these items replaced while energized.</p> <p>Electrical Work - Entry (or any situation where direct contact with energized circuits/devices will occur) into an electrical/electronic enclosure, a cabinet, chassis, piece of equipment or system for the express purpose of disconnecting, removing, replacing, and/or reconnecting components, hardware or appliances or otherwise performing "work."</p>	Change is incorporated.
NGSB- NN Department X31		300-2.4.1.2	<p>300-2.4.1.2 <b>There is no difference between work in the vicinity of and work on energized equipment; any evolution (maintenance, testing, or operation) being performed where energized circuits are readily accessible by incidental contact with tools or personnel is work on energized gear.</b> The term work in the vicinity of energized gear should not be used, because it may confuse workers and supervisors to the risks present. The applicable requirements of Section 300-2.4.3 must be followed when working on energized gear.</p>	Change is incorporated.
Howard Snyder		300-2.4.1.2	Add paragraph heading "Vicinity."	No change required.

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John Lastowski		300-2.4.1.3	Paragraph becomes new 300-2.4.1.3.1 lettered list item b. And text is changed to read "b. This chapter cannot address every situation and circumstance where work on energized gear might be required for specific components/systems. All energized work should be approved by the Commanding Officer or designated representative, unless directed by a NAVSEA approved procedure and should be controlled in accordance with the requirements of <b>Section 300-2.4.3</b> . Modification of these requirements should only be used after evaluating the risks against the operational benefits and receiving NAVSEA approval Commanding Officers should be judicious in delegating their authority. Electrical workers..."	Change is incorporated.
SUBLANT N4		300-2.4.1.3	Change to: "This chapter cannot address every situation and circumstance where work on energized gear might occur. When permitted by TYCOM Guidance for specific ship types/operations or by a higher authority for specific components/systems, the requirements of Section 300-2.4.3 may be modified with careful consideration. If a situation occurs that requires a local modification of the requirements Section 300-2.4.3, the modification should only be used after evaluating the risks against the operational benefits and requires the Commanding Officer's permission. When modified, local guidance should establish clear policy when such modifications are permitted; Commanding Officers should be judicious in delegating their authority. Electrical workers and their supervisors must evaluate the hazards that may exist and take the appropriate precautions to mitigate these risks. When the circumstances or the scope of the maintenance changes, then work should be stopped, reevaluated, and all applicable requirements must be reconsidered and implemented as applicable, including revisions to or issuance of authorizing work control documents."	Change is incorporated with modifications.
Howard Snyder		300-2.4.1.3	Add paragraph heading "Procedural modification." Update 3rd sentence to read "If a situation occurs that requires a local modification of requirements of Section-2.4.3, the modification should only be used..."	Change is incorporated with modifications.
CESWG		300-2.4.1.4	Suggest the entire paragraph be moved to the first paragraph in this section (300-2.4.1). Powerful words that need to be stated up front. <i>Review Action:</i> 11-8-10 Done	No change required, makes better sense here.
John Lastowski		300-2.4.1.4	Paragraph becomes new 300-2.4.1.3.1 lettered list item c.	Change is incorporated.
Howard Snyder		300-2.4.1.4	Delete last sentence.	Do not concur. No change required.
CESWG		300-2.4.1.4 Last Line	...should always be viewed and planned "with additional risk mitigation". (delete the "as abnormal" words). <i>Review Action:</i> 11-9-10 Done	Do not concur. No change required.

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CLT Norman		300-2.4.2	Recommend deleting the third sentence, "Exceptions to this policy...which require equipment to remain energized." This shall ensure that no electrical equipment will be disassembled nor undergo any maintenance energized without the Commanding Officers permission.	Change is incorporated.
CLT Norman		300-2.4.2	Recommend last sentence read "...when performing IVV, Section 300-2.5.1 through 300-2.5.3..." To be less confusing.	Change is incorporated.
John Lastowski		300-2.4.2	Renumber paragraph and title to "300-2.4.1.3.2 Requirements:" Change text to lettered list item a. and is changed to read: "...without approval by the Commanding Officer or designated representative. Some specific types of equipment maintenance require work to be done on energized equipment. Commanding Officer's permission is not specifically required if such maintenance is scheduled to be performed in accordance with approved instructions issued by NAVSEA which permit opening or inspecting energized electrical equipment, per <b>Section 300-2.5.7</b> in the course of performing maintenance, tests, measurements, or adjustments which require equipment to remain energized. During ship availabilities or where such work on energized equipment is anticipated, authorization to accomplish energized work should be obtained in advance, whenever possible, to minimize work delays. Commanding Officer's permission is not required when performing IVV per <b>Section 300-2.5.1</b> through <b>300-2.5.3</b> , or safe to work voltage checks (STW) per <b>Section 300-2.5.4</b> .	Change is incorporated.
John Lastowski		300-2.4.2	Rationale: allows an exception for attaining Commanding Officers' permission when NAVSEA approved instructions permit opening or inspecting energized equipment in the course of performing maintenance, tests, measurements or adjustments which require equipment to remain energized. Is it not the intention that the CO approve all instances where personnel aboard his Ship will be working on or inspecting energized equipment? This guidance also conflicts with new paragraph 300-2.5.7 which states CO permission is required for visual inspections of energized gear.	Change is incorporated.
John Lastowski		300-2.4.2	In the WARNING after 300-2.4.2, delete offsetting commas around 'greater than 1000 volts'	Change is incorporated.
Howard Snyder		300-2.4.2	In last sentence change 'safe to work' to 'Safety Frisk' and delete "(STW)"	Do not concur, already defined STW.
Dennis Neitzel		300-2.4.3	Add sentence after paragraph heading " <u>Working on energized circuits shall be performed by qualified workers only.</u> "	Do not concur, qualification is already addressed.

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Jeffery Watson		300-2.4.3	<p>When repair or maintenance must be done on energized circuits or equipment, the following precautions shall be observed in addition to the general precautions of <b>Section 300-2.3.</b></p> <p><b>NOTE</b></p> <p><b>Ensure a safety brief is conducted by supervisory personnel prior to commencing work.</b></p> <p><b>Ensure all involved personnel are properly briefed; understand the work which is being conducted, are qualified to perform the work, and are aware of the associated hazards.</b></p> <p>Never work on energized electrical or electronic equipment alone. A second person trained in first aid for electrical shock shall be present, as a safety observer... <b>The safety observer shall know which circuits and switches de-energize the equipment, and must be given instructions to operate those immediately if anything unforeseen happens.</b></p> <p><i>(I do not believe we can meet the intent for the safety observer )</i></p>	The intent of this comment is incorporated by format changes.
John Lastowski		300-2.4.3	Rename paragraph "ENERGIZED WORK REQUIREMENTS." Update paragraph to read "requiremetns" not "precautions"	Change is incorporated.
John Lastowski		300-2.4.3	<p>Note should be listed as step "a." vice a "Note" Change to lettered item a. and reletter subsequent lettered items.</p> <p>Update to read "a. Ensure a safety brief is conducted, including supervisory personnel, prior to commencing work. Ensure all affected personnel are properly briefed; understand the work which is being conducted, are qualified to perform the work, and are aware of the associated hazards.</p>	Change is incorporated.
Howard Snyder		300-2.4.3	Add reference to Table 300-2-. "...circuits or equipment, Table 300-2-1 and the following..."	Change is incorporated.
CESWG		300-2.4.3 a	<p>Line 2: Grammar: ...as a safety observer. (delete the extra periods).</p> <p><i>Review Action: 11-9-10 Done</i></p>	Change is incorporated.
CLT Norman		300-2.4.3 a	has an ellipsis to end the second sentence.	Change is incorporated.
Dwayne Wood		300-2.4.3 a	<p>2. Paragraph 300-2.4.3.a states that a safety observer (for work on energized gear) shall know which circuits and switches de-energize the equipment and must have permission to operate them immediately if anything unforeseen happens.</p> <p>a. Shop will never operate Ship's Force equipment and I cannot foresee Ship's Force providing safety observers for SY mechanics.</p> <p>b. This requirement should be amended or removed.</p>	Do not concur. No change required.
PPEA		300-2.4.3 a	<p>a. Comment: The expression "anything happens" is too vague and should be reworded to clarify events warranting de-energization.</p> <p>b. Rationale: The expression is easily misinterpreted.</p>	Change is incorporated with modifications.

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John Lastowski		300-2.4.3 a	Change to lettered item b and update to read "Never work on energized electrical or electronic equipment alone. A person trained in first aid for electrical shock shall be present, as a safety observer. The safety observer shall know which circuits and switches de-energize the equipment, and must be given instructions to operate those immediately if needed due to shock or arc flash. The safety observer shall not become involved in activities that would distract from the responsibilities discussed above, or require them to vacate the energized gear work site."	Change is incorporated.
Howard Snyder		300-2.4.3 a	Delete extra periods after "as a safety observer"	Change is incorporated.
CLT Norman		300-2.4.3 b	fifth sentence should read "ABT switches are tagged in the manual position."	No change required due to format changes..
PPEA		300-2.4.3 b	a. Comment: This section should address the fact that without SABT isolation switches, the SABT can feed-through to the load side of feeder breakers. b. Rationale: The atypical properties of the tag-out procedure for SABT without isolation switches provides sufficient hazard to warrant specific attention in this paragraph.	No change required due to format changes.
John Lastowski		300-2.4.3 b	Change to lettered item c and two sentences at the beginning of the lettered item: "Minimize work on energized equipment. Work on energized equipment should only be done when absolutely necessary based on the nature of the work or the criticality of the systems involved."	Change is incorporated.
John Lastowski		300-2.4.3 b	Recommend the Tag-out requirements listed in the paragraph be moved to the EQUIPMENT TAG-OUT PROCEDURES Section 300-2.3.3. The requirements listed do not just apply to working on energized gear. The 2.4.3.b precaution could then be "Equipment shall be de-energized to the maximum extent possible by opening circuit breakers, positioning switches and/or removing fuses of all possible sources of power. DANGER tag these circuit breakers, switches and fuses in accordance with Section 300-2.3.3 and ref (b)." Move to 300-2.3.3 "Remotely controlled circuit breakers and metering circuits shall be disabled by removing control power fuses. The use of control circuits and interlocks in place of DANGER tagging components to prevent operation is prohibited. Ensure automatic bus transfer (ABT) switches tagged in the manual position, and all manual bus transfer (MBT) interlock devices are fully operational and tagged in the appropriate position.	Change is incorporated with modifications.
Dennis Neitzel		300-2.4.3 c	After "Workers inside the electrical safety boundary add " <u>(Limited Approach Boundary and/or Arc Flash Protection Boundary)</u> "	Do not concur. No change required. Terminology does not apply to NSTM.
John Lastowski		300-2.4.3 c	Change to lettered item d and Update to read "Person shall be..."	Change is incorporated.

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Dennis Neitzel		300-2.4.3 d	Update second sentence to read " <u><b>Rated</b></u> rubber <u><b>insulating</b></u> mats or rubber <u><b>insulating</b></u> blankets shall be used" Update third sentence to read "Do not use <u><b>rubber</b></u> insulating material..."	Intent of change is incorporated.
PPEA		300-2.4.3 e	a. Comment: This section should address the fact that the unoccupied hand should not be grounded to prevent a current path through the body. b. Rationale: The expression is easily misinterpreted.	Intent of comment incorporated.
John Lastowski		300-2.4.3 e	Change to lettered item f and Add words about not contacting metal with free hand.	Intent of comment incorporated.
CLT Norman		300-2.4.3 f	draft revision removes specific permission allowing removal of one glove if needed. Request either the technical community to evaluate and improve the current gloves in stock or have the allowance be reinserted to allow manipulations that require fine manual dexterity such as replacing a small nut on a lead post.	Change is incorporated.
John Lastowski		300-2.4.3 f	Change to lettered item g and update to read "Wear properly rated rubber gloves on both hands. If rubber gloves can not be used on both hands based on the nature of the work, a rubber glove shall be worn on the one hand not used for handling tools. Inspect the gloves for damage before use per <b>Appendix 300-I.</b> "	Change is incorporated.
SUBLANT N4		300-2.4.3 f	From: "Wear proper rated rubber gloves on both hands."  To: "If the work being done permits, rubber gloves shall be worn on both hands; if not, a rubber glove shall be worn on the one hand not used for handling tools."	Intent of comment incorporated.
SUBPAC N4		300-2.4.3 f	a. This section states, "Wear proper rated rubber gloves on both hands." This is a change from current guidance, which allows wearing only one glove (on the non-working hand) if conditions preclude performing work while wearing a glove. Given the configuration and small size of many components on submarines, it is impossible to perform many jobs while wearing a rubber glove on the working hand. b. <b>Recommend</b> retaining current guidance, "If the work being done permits, rubber gloves shall be worn on both hands; if not a rubber glove shall be worn on the one hand not used for handling tools."	Intent of comment incorporated.
John Lastowski		300-2.4.3 g	Change to lettered item h and update to read "...insulating glove but should cover the wrist."  States that the leather protective gloves do not have to completely cover the rubber insulating glove but should come above the wrist; however, ASTM F496-08 "Standard Specification for In-Service Care of Insulating Gloves and Sleeves" section 8.7.2 requires the protector glove be shorter than the top of the cuff of the insulating glove by the distance specified in Table 4(1/2 inch to 4 inches) depending on glove Class	Change is incorporated.

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Howard Snyder		300-2.4.3. f	Update to read "If the work being done permits, rubber gloves shall be worn on both hands; If not, a rubber glove shall be worn on the one hand not used for handling tools. Inspect the gloves..."	Change is incorporated.
Howard Snyder		300-2.4.3 i	Update to read "... (arc flash suit) per Appendix I, Table 300-2-1, Table 300-2-2, Table 300-2-3, and Table 300-2-4..."	Change is incorporated.
Johnathan Gatliff		300-2.4.3 h	The wording in paragraph 2.4.3.h is confusing. Recommend having it say, "A protective, impact resistant, arc flash face shield shall be worn at all times because residual high voltages present a stored energy in power circuits and equipment, and is capable of causing arcing, intense heat, or flying molten particles. Appendix-I	Change is incorporated.
Dennis Neitzel		300-2.4.3 h	Update first sentence to read "...arc flash <u>rated</u> face shield..."	Change is incorporated.
Jim Kaufman		300-2.4.3 h	faces shield rating should be referenced, i.e. 'a properly rated protective face shield per table...)	Change is incorporated.
CESWG		300-2.4.3 h	An arc flash face shield shall be worn at all times for all categories of arc flash hazards including level 0? Suggest you put in a table similar to 300-2-1 for energized work showing the different voltages and safety equipment required. Then refer to that table in this paragraph. Appendix I can be referred to for purchase, care and maintenance of electrical safety equipment.	Concur. Addressed with modifications.
Wes Bailey		300-2.4.3 h	An arc flash face shield shall be worn at all times for all categories of arc flash hazards including level 0? Shouldn't level of PPE correspond to the hazard? <i>Review Action:</i> The energy levels in hazards determines the shield, but limits on shipboard supply of PPE drives us to use overrated gear.	Change is incorporated.
John Lastowski		300-2.4.3 h	Change to lettered item i and update to read "...arc flash face shield per Appendix 300- I shall be worn to protect from the damaging effects of an arc flash/blast as residual voltages, and stored energy in power circuits and equipment are capable of causing arcing, intense heat or flying molten particles."	Change is incorporated.
Howard Snyder		300-2.4.3 h	Add 'per' before Appendix-I reference.	Change is incorporated.
Dennis Neitzel		300-2.4.3 i	Update first sentence to read "...A protective, <u>arc rated</u> flame resistant..."	Change is incorporated.
CESWG		300-2.4.3 i	Present documentation does not cover all applications. Table 300-2-1 is for IVV Checks. Table 300-2-2 is for Fuse removal and replacement only. Table 300-2-3 is for 'Requirements for draw-out type circuit breaker rack-in/out' only. Appendix I does not give any specific direction how to do Energized Work. QUESTION: What regulates Energized Work that is other then IVV, fuse removal or CB rack-in/out? Like trouble-shooting electrical equipment.(SEE ITEM #25 BELOW for guidance on a TABLE.) Item #20 also addresses the need for a table for energized work.	Great comment. Change is incorporated.

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CLT Norman		300-2.4.3 i	Recommend wording "A protective, arc flash suit" per Appendix 300-I.	Change is incorporated.
Wes Bailey		300-2.4.3 i	Present documentation does not cover all applications. Table 300-2-1 is for IVV Checks. Table 300-2-2 is for Fuse removal and replacement only. Table 300-2-3 is for 'Requirements for draw-out type circuit breaker rack-in/out' only. <b>Appendix I</b> does not give any specific direction how to do Energized Work. <b>QUESTION: What regulates Energized Work that is other than IVV, fuse removal or CB rack-in/out?</b> Like trouble-shooting electrical equipment.(SEE NOTE #7 BELOW) <i>Review Action:</i> Corrections to improper paragraph, figure or table data must be made. This proofing should be tasked by NAVSEA prior to issue; I mentioned similar items during development meetings, but it was deferred to after we submitted a draft for Rev 8.	Changes will be incorporated during final review.
John Lastowski		300-2.4.3 i	Change to lettered item j and update first sentence to read "... (arc flash suit), shall be worn when applicable per Table 300-2-1, Table 300-2-2 and Table 300-2-3, and Appendix 300-I to protect from the damaging effects of an arc flash/blast. Delete second sentence.	Change is incorporated.
CESWG		300-2.4.3 j	Same issue as #21 above. Present documentation does not cover all applications. What regulates the distance to keep unauthorized personnel at a safe distance for other than IVV's, fuse removal or CB rack-in/out? (SEE ITEM #25 BELOW)	Concur. New table will be added.
CLT Norman		300-2.4.3 j	recommend rewording first sentence to read "Minimize access to energized work areas, ..." as the phrase "in the vicinity" has been removed elsewhere.	Change is incorporated.
Wes Bailey		300-2.4.3 j	Same issue as #4 above. Present documentation does not cover all applications. What regulates the distance to keep unauthorized personnel at a safe distance for other than IVV's, fuse removal or CB rack-in/out? (SEE NOTE #7 BELOW) <i>Review Action:</i> Not sure all work type should end up in the table, a general rule should apply outside these specific jobs.	See comment #293.
John Lastowski		300-2.4.3 j	Change to lettered item k and update to read "Minimize access to the energized work areas..."  add a Reference to the appendix where warning signs are exemplified	Change is incorporated.
Howard Snyder		300-2.4.3 j	Change 'barriers' to 'boundaries' and 'barrier' to 'boundary'. Add reference to Table 300-2-4, "...per Table 300-2-1, Table 300-2-2, Table 300-2-3 and Table 300-2-4."	Do not concur. No change required.
Dennis Neitzel		300-2.4.3 k	Delete second sentence and add sentence to read " <u>Tools must be insulated per ASTM F1505 to be considered as insulated tools. Other methods of "insulating" are not acceptable.</u> "	Concur with modifications.



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CESWG		300-2.4.3 k	Factory insulated tools are much superior for verifying compliance for use at different voltage levels than hand wrapped tools. For improved safety, why not mandate use of Factory insulated tools that are voltage rated as the primary requirement with allotment for hand wrapping in special circumstances? <i>Review Action:</i> Klein Tools sent me a mail and indicated that insulated tools are rated at 1000 volts.	See comment #300. Note: Energized work greater than 1,000 volts is not authorized for ship's force.
Wes Bailey		300-2.4.3 k	Factory insulated tools are much superior for verifying compliance for use at different voltage levels than hand wrapped tools. For improved safety, why not mandate use of Factory insulated tools that are voltage rated as the primary requirement with allotment for hand wrapping in special circumstances? <i>Review Action:</i> Would need to id the specific NSN for tools or a specific standard for rating tooling electrical insulation.	See comment #301.
NNSY Code 2330		300-2.4.3 k	On page 300-42 in paragraph 300-2.4.3(k) still permits that tools used for energized work be insulate with either (2) layers of electrical tape (half-lapped) or plastisol. I understood that this allowance was being discontinued and only tools designed and manufactured for energized electrical work would be allowed?	See comment #301.
John Lastowski		300-2.4.3 k	Change to lettered item l and update to read "Methods may include: the use of two layers or rubber or vinyl plastic tape, half lapped, or coating tools with Plastisol. Refer to the applicable instructions..."	Change is incorporated.
Howard Snyder		300-2.4.3 k	Update second sentence to read "... half-lapped as a last resort, or coating..."	No change required.
CESWG		300-2.4.3 l	Line 3: This line refers to two people identified in 300-2.4.3.a. Only the safety observer is discussed in 300-2.4.3.a. Suggest you reword to say "...may be the person identified in Paragraph 300-2.4.3.a." <i>Review Action:</i> 11-9-10 Done	Change is incorporated.
Dennis Neitzel		300-2.4.3 l	Update first sentence to read "...a person certified in <u>first aid and</u> CPR..."	No change required. First aid is a required qualification vice certification.
EMCM Cox		300-2.4.3 l	Last sentence needs to be clarified to avoid the possibility of having the CPR qualified person also being the worker.	Change is incorporated.
Jeffery Watson		300-2.4.3 l	While work is being done, a person certified in CPR shall be available in case of electric shock. This person does not have to be at the job site, but must be available to immediately respond in case of shock. This person may be one of the two persons identified in <b>Paragraph 300-2.4.3.a.</b>  (Allows CPR qualified person to not be at work site contrary to NNSY policy. This also infers that the CPR qualified person can be the one performing the work)	Change is incorporated.

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John Lastowski		300-2.4.3 l	<p>Change to lettered list m and update to read "While work is being done, a person certified in CPR shall be designated and immediately available in case of electric shock. This person may be the safety observer identified in Paragraph 300-2.4.3.b.</p> <p>Delete note following lettered item.</p>	Change is incorporated.
NGSB- NN Department X31		300-2.4.3 l	<p>The Energized Circuit Watch shall be CPR qualified and post outside of the energized work area.</p> <p>a. Never work on energized electrical or electronic equipment alone. A second person trained in first aid for electrical shock shall be present, as a safety observer... The safety observer shall know which circuits and switches de-energize the equipment, and must be given instructions to operate those immediately if anything unforeseen happens.</p> <p>l. While work is being done, a person certified in CPR shall be available in case of electric shock. <b>This person does not have to be at the job site, but must be available to immediately respond in case of shock.</b> This person may be one of the two persons identified in Paragraph 300-2.4.3.a.</p>	See comment #310.
Howard Snyder		300-2.4.3 l	Update last sentence to read "...person may be the person identified..."	Intent of comment incorporated.
CESWG		300-2.4.3 m	The writers of NSTM 300 were right to develop this section for taking 'extra precautions when the nature of the work is particularly hazardous...' This can be expanded for Arc Flash Hazards. The D.O.E. has developed 'Hazard classes' which uses the potential exposure presented by the voltage, current, power and stored power or energy available while performing the task into four Hazard classes. Navy could develop a chart similar to the D.O.E. that classifies energy into segments based on Available Fault Current and Voltage to determine what hazard level to use for Arc Flash. See (ref. 1&2 below, Item 46 and 47).	Thank you. No action required.

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Wes Bailey		300-2.4.3 m	<p>The writers of NSTM 300 were right to develop this section for taking 'extra precautions when the nature of the work is particularly hazardous...' This can be expanded for Arc Flash Hazards. The D.O.E. has developed 'Hazard classes' which uses the potential exposure presented by the voltage, current, power and stored power or energy available while performing the task into four Hazard classes. Navy could develop a chart similar to the D.O.E. that classifies energy into segments based on Available Fault Current and Voltage to determine what hazard level to use for Arc Flash. See (ref. 1&amp;2 below).</p> <p><i>Reveiw Action:</i></p> <p>DOE may focus their levels on voltage classes related to the power grid, well above the typical shipboard distribution voltages. We discussed this matter to some degree and had trouble building this into a working table within the time constraints for Rev. 8 issue.</p> <p>Could be item for future consideration.</p>	Thank you. No action required.
NNSY Code 2330		300-2.4.3 m	<p>On page 300-43 in paragraph 300-2.4.3(m) dealing with particularly hazardous work; the second part "the work requires actual contact by tools to energized components" looks to be overkill unless the components are located within a hazardous area such as a switchboard. As currently written this paragraph seems to conflict with the definitions on low and medium risk work contained in paragraph 300-2.5.11 &amp; 12.</p>	Change is incorporated.
John Lastowski		300-2.4.3 m	<p>Change to lettered item n and update to read "Take the following extra precautions when the nature of the work provides increased risk of contact with an energized conductor. Examples include workinternal to an electrical enclosure such that the maintenance person has to break the electrical plane of a switchboard with their arms extended into the enclosure beyond the elbow, the nature of work inside an enclosure could result in a person falling into or inadvertently hitting and energized component while adjusting, taking measurements, or replacing equipment, or if the work requires actual contact by tools to the energized components:"</p> <p>Add numbered item 2 to read "(2) Personnel shall be properly supervised while performing particularly hazardous work. The supervisor shall not be involved in the actual work but shall ensure that the work is performed safely and that procedures and all safety precautions are followed."</p> <p>Renumber items 2 and 3 to 3 and 4 respectively. Update last sentence of item 4 to read "This person may be the safety observer identified in Paragraph 300-2.4.3.b and 300-2.4.3.m.</p>	Change is incorporated.

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John Lastowski		300-2.4.3 m	Item 4 specifies the use of nonconductive grab sticks but does not explain how this piece of equipment is to be used. There should be clarification and guidance with regards to the use of this equipment.	See comment # (find comment)
Howard Snyder		300-2.4.3 m 2	Change 'barriers' to 'boundaries'	Do not concur. No change required.
EMCM Cox		300-2.4.3.1	Sentence is confusing. Recommend rewriting: Energized circuit working procedures are not mandated for circuits and equipment that are greater than 30V if the energized circuits are covered or isolated by authorized insulating materials to prevent incidental contact with tools or personnel. For equipment with voltages less than 30V, observe the requirements of TABLE 300-2-1	Intent of comment incorporated.
Dwayne Wood		300-2.4.3.1	3. Paragraph 300-2.4.3.1 states energized circuit working procedures are not mandated for circuits and equipment that are adequately covered or isolated from adjacent energized circuits by authorized insulating materials to prevent incidental contact with tools or personnel or for equipment less than 30 volts. a. Would help if changed "insulating materials" to "insulating materials or equipment design". This would capture scenarios where protective covers are permanently installed that isolate energized voltages such as within the Type 2 RPCC or within PPLAN Media Convert Enclosures.	Will not be clear enough for deck plate user.
John Lastowski		300-2.4.3.1	What does "adequately covered... by authorized insulating materials mean"? Does covering a work area with rubber mats make energized circuit precautions irrelevant? Recommend adding additional detail or examples to clarify the meaning of this section.  I don't like this...provides too much wiggle room for interpretation.	Changes incorporated.
RPPY		300-2.4.3.1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
SUBLANT N4		300-2.4.3.1	Currently: "Energized circuit working procedures are not mandated for circuits and equipment that are adequately covered or isolated from adjacent energized circuits by authorized insulating materials to prevent incidental contact with tools or personnel or for equipment less than 30 volts."  For clarity, the paragraph should give more guidance or examples to assist worker in identifying when this paragraph is applicable. It is vague right now and could lead to undesired interpretation.	Change is incorporated.

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NGSB- NN Department X31		300-2.4.3.1	<p>Energized circuit safety procedures are in place even after the circuits are covered by authorized insulating materials. Energized safety requirement can be removed only if the equipment's design completely prevents incidental contact with tools or personnel or for equipment less than 30 volts.</p> <p>300-2.4.3.1 Energized circuit working procedures are not mandated for circuits and equipment that are adequately covered or isolated from adjacent energized circuits by authorized insulating materials to prevent incidental contact with tools or personnel or for equipment less than 30 volts.</p>	Change is incorporated.
Howard Snyder		300-2.4.3.1	Add paragraph heading "Non-mandated working procedures."	Change is incorporated.
SUBPAC N4		300-2.4.3.1	<p>a. This section states, "Energized circuit working procedures are not mandated for circuits and equipment that are adequately covered or isolated from adjacent energized circuits by authorized insulating materials to prevent incidental contact with tools or personnel or for equipment less than 30 volts."</p> <p>b. While this exception clearly applies to permanently installed shields (i.e., new submarine RPCPs are all &lt;30V except for one corner with 115V that is covered with a complex closure), it is unclear whether it applies to user-installed coverings. For example, if a worker covers a portion of a drawer with 115V in it with a piece of rubber, does section 300-2.4.3.1 exempt the worker from taking energized gear precautions?</p> <p>c. <b>Recommend</b> clarifying whether section 300-2.4.3.1 applies only to permanently installed covers/isolations or includes user-installed covers/isolations.</p>	Do not concur. See comment #325.
John Lastowski		300-2.4.3.3	Recommend deleting this section as all it does is provide a lead-in to section 300-2.5	Change is incorporated.
RPPY		300-2.4.3.3	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
Howard Snyder		300-2.4.3.3	Update paragraph number to 300-2.4.3.2. Add paragraph heading "PPE references."	No change required.
NGSB- NN Department X31		300-2.4.3.a	<p>Energize testing on circuits 600vAC/800vDC and less requires no additional safety observer or watch.</p> <p>a. <b>Never work on energized electrical or electronic equipment alone.</b> A second person trained in first aid for electrical shock shall be present, as a safety observer... The safety observer shall know which circuits and switches de-energize the equipment, and must be given instructions to operate those immediately if anything unforeseen happens.</p>	Do not concur.
CLT Norman		300-2.5	title is confusing. Recommend rewording to read "WORKING ON DE-ENERGIZED EQUIPMENT AND ENERGIZED EXCEPTIONS".	Incorporated with modifications.

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John Lastowski		300-2.5	Several sub-paragraphs discuss using a stray voltage eliminator to check for stray voltage. Appendix I should call-out this device. Provide SCAT code and provisioning. Who pays for it?	Mike Simunek will ensure SCAT codes for all test equipment in Appendix 300-I.
John Lastowski		300-2.5	Rename section "RELAXED REQUIREMENTS FOR SPECIFIC ENERGIZED WORK"	Change is incorporated with modifications.
John Lastowski		300-2.5	Add WARNING after section title to read " <b><u>WARNING</u></b> <b>Due to the additional risk of coming in contact with energized equipment, additional energized work controls should be considered if the equipment is in a hard to access area, high sea states exist, etc. "</b>	Change is incorporated.
John Lastowski		300-2.5	For consistency, need a sub-paragraph number here, move text of paragraph to new paragraph "300-2.5.1 Principles:" Update text to read "...that is energized, or has not yet been proven de-energized." "...may not need to be followed based on the risk of electrical shock or arc flash presented by the nature of the work; instead a specific set of requirements contained herein may be used. these deviations are based on the nature of the risk posed by the specific evolutions. Relaxed electrical safety precautions are taken to balance completion of maintenance with protection of personnel based on specific risks and equipment design criteria. Specifically, the following is covered:"  Remainder of paragraph should be formatted as a lettered list and updated to read: a. IVV checks. Equipment has been isolated electrically, but is considered energized until verified de-energized as objective quality evidence to account for isolation aberrations.	Change is incorporated.

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John Lastowski		300-2.5	<p>b. Fuse removal/replacement. This is a low risk evolution when the appropriate safety precautions are taken due to minimal risk of contact with energized conductors unless a faulted condition or equipment discrepancy exists.</p> <p>c. Racking-in/out draw-out type circuit breakers. This type of circuit breaker is designed to be racked-in/out from an energized switchboard and therefore poses reduced electrical safety risks unless a faulted condition or equipment malfunction occurs.</p> <p>d. Visual inspections of energized gear. This evolution requires exposing personnel to energized circuits, but physically touching components is prohibited. As such, the risk of electrical shock is low unless inadvertent or unplanned contact with energized conductors occurs.</p> <p>e. Circuits adequately covered.; In this case, potentially exposed energized circuits are safely isolated from the technician such that inadvertent contact is a low risk.</p> <p>f. Energized equipment Less than 30 volts. Although energized, the voltage involved presents minimal risk to personnel.</p> <p>Sub-bullets a through d have unique sections associated with them. Need to create a parallel structure for bullets e. and f. below</p>	Change is incorporated.
John Lastowski		300-2.5	A new section for <30V requirement needs to say that you don't need to fully de-energize if less than 30V, but do need to de-metalize and take electrostatic discharge precautions to protect sensitive electronics from damage per...add ref to NSTM 400, section 400-2.5, or G/I 5 of RX I&C maintenance manual, or add new section on ESD controls.	Partially incorporated change.
John Lastowski		300-2.5	New Sub-bullets a through d have unique sections associated with them. Need to create a parallel structure for bullets e and f.	Change is incorporated.
RPPY		300-2.5	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
Howard Snyder		300-2.5.1	Change table reference to "Table 300-2-2"	No change required due to structure change.

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John Lastowski		300-2.5.1.1	<p>Add paragraph "300-2.5.1.1 <b>INITIAL VOLTAGE VERIFICATION (IVV):</b>  300-2.5.1.1.1 Discussion:  a. 30 to 1000 volts (low risk). This category describes situations when verifying the equipment de-energized poses a low risk to personnel when the requirements of Table 300-2-1 are followed. Examples are:  (1). Single power source equipment. (a single speed motor, an oven, a string of lights, etc.).  (2). Multiple power source equipment as designated by the Commanding Officer (a single speed motor controller that also has an alarm circuit, a dual speed fan with two power supplies, etc.).  b. 30 to 1000 volts (medium risk). This category describes situations when verifying the equipment de-energized poses a medium risk to personnel. Follow the requirements of Table 300-2-1 for this category. Examples are:  (1). Load centers and switchboards.  (2). Newly installed equipment, until the electrical safety isolation has been verified.  (3). Multiple power source equipment that has not been designated as low risk by the Commanding Officer.  (4). Damaged equipment as described in Section 300.2.6.</p>	Change is incorporated.
John Lastowski		300-2.5.1.1	<p>c. High Risk. This category describes situations when verifying the equipment de-energized can pose a higher risk to personnel. Follow the requirements of Table 300-2-1 for this category. Examples are:  (1). Equipment and systems that are powered from sources greater than 1000 volts.  (2). Equipment and systems that PMS or equipment technical manuals designate as requiring greater than 12 cal/cm2 arc flash PPE to verify de-energized.</p> <p>300-2.5.1.1.2 Requirements:  a. Personnel are required to conduct IVV checks prior to beginning maintenance on electrical equipment and systems to verify it is de-energized. Equipment is considered energized until IVV checks verify it is de-energized.  b. When performing IVV checks on systems isolated for de-energized work, the general precautions of Section 300-2.3 must be followed as well as the requirements of Table 300-2-1 until the circuit is verified de-energized.  c. Special precautions for conducting voltage checks on systems 1000 volts or greater.:</p>	Change is incorporated.



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John Lastowski		300-2.5.1.1	<p>(1) A person must have background, training and experience with electrical equipment and installations to be qualified for maintenance on shipboard equipment 1000 volts or greater.</p> <p>(2) Personnel shall not work alone when verifying circuits de-energized.</p> <p>(3) The precautions of Section 300-2.5.3 shall be observed in addition to the general precautions of Section 300-2.3 when verifying that equipment 1000 volts or greater is de-energized prior to commencing maintenance or repairs.</p> <p>d. Safe To Work (STW) checks in accordance with Section 300-2.5.4, shall be performed prior to restarting work any time work has been secured and the equipment has been left unattended.</p> <p>e. Use Table 300-2-1, to determine the appropriate requirements to use for verifying equipment de-energized.</p>	Changes incorporated with modifications.
John Lastowski		300-2.5.1.1	<p>f. Checking metering and control circuits. When performing IVV checks, ensure that metering and control circuits are checked, as well as power circuits. In many cases, metering and control circuits are connected to the supply side of a circuit breaker or supplied from a separate source. A check of the load side of a circuit breaker may indicate that the power circuit is de-energized after the circuit breaker is opened, but such a check gives no assurance that associated metering and control circuits are de-energized.</p> <p>g. Handling removable test leads. Make sure that removable test lead connections on portable meters are tight. Shock and fire hazards are created if the meter end of an energized test lead is allowed to come adrift during a check of energized circuits. Only the portion of test leads necessary to make contact with the electric circuit or meter should be bare conductors; all other portions should be insulated.</p> <p>h. Discharging de-energized circuits. The electrical charge retained by secured electrical equipment may be great enough to cause a shock. This danger must be considered before touching</p>	Change is incorporated.

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John Lastowski		300-2.5.1.1	the terminals to apparently de-energized equipment. Additionally, capacitors are used in EMI suppression accessories and circuit filters, in electrical power and lighting, interior communication, fire-control and other electronic equipment. If capacitive voltage is detected after the circuit is de-energized, and before touching a capacitor that is connected to a de-energized circuit, discharge the equipment to ground by momentarily connect-ing the terminal to ground using a shorting probe, Appendix 300-I, or the built-in grounding bar if provided. Capacitors and cathode ray tubes (CRT) can redevelop a charge after a period of time due to dielectric properties and may need to be shorted several times before being fully discharged. Capacitors can only regain a small percentage of energy after a shorting evolution is performed. As such, three shorting evolutions spaced approximately ten seconds apart should eliminate nearly all of the original energy that was stored in the capacitor.	Change is incorporated.
John Lastowski		300-2.5.1.1	i. Minimizing access. Minimize access to open electrical equipment. Posting signs and erecting barricades at the electrical safety boundary or FPB distance, Table 300-2-1, or securing covers of unattended equipment are acceptable methods for minimizing access and the risk of electrical shock. j. Arc flash and electrical safety requirements. Table 300-2-1 describes the minimum requirements to be utilized when performing IVV checks. Care should be taken to evaluate each circumstance when applying the criteria below.	Change is incorporated.
Howard Snyder		300-2.5.1.10	Change table reference to "Table 300-2-2"	Do not concur.

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NGSB- NN Department X31		300-2.5.1.10 - 300- 2.5.1.13	<p>No PPE is required for 600vAC/800vDC and less for de-energized checks (AOV). All PPE (arc flash/shock protection) is required for greater than 600vAC/800vDC for de-energized circuit checks (AOV). We do not define low or high risk situation/equipment to apply requirements.</p> <p>300-2.5.1.10 Arc flash and electrical safety requirements. Table 300-2-1 describes the minimum requirements to be utilized when performing IVV checks. Care should be taken to evaluate each circumstance when applying the criteria below.</p> <p>300-2.5.1.11 30 to 1000 volts (<b>low</b> risk). This category describes situations when verifying the equipment de- energized poses a low risk to personnel when the requirements of Table 300-2-1 are followed. Examples are:</p> <ul style="list-style-type: none"> <li>a. Single power source equipment. (a single speed motor, an oven, a string of lights, etc.).</li> <li>b. Multiple power source equipment as designated by the Commanding Officer (a single speed motor controller that also has an alarm circuit, a dual speed fan with two power supplies, etc.).</li> </ul>	No change required.
NGSB- NN Department X31		300-2.5.1.10 - 300- 2.5.1.13	<p>300-2.5.1.12 30 to 1000 volts (<b>medium risk</b>). This category describes situations when verifying the equipment de- energized poses a medium risk to personnel when the requirements of Table 300-2-1 are followed. Examples are:</p> <ul style="list-style-type: none"> <li>a. Load centers and switchboards.</li> <li>b. Newly installed equipment, until the electrical safety isolation has been verified.</li> <li>c. Multiple power source equipment that has not been designated as low risk by the Commanding Officer.</li> <li>d. Damaged equipment as described in Section 300.2.6.</li> </ul> <p>300-2.5.1.13 <b>High Risk</b>. This category describes situations when verifying the equipment de-energized can pose a higher risk to personnel when the requirements of Table 300-2-1 are followed. Examples are:</p> <ul style="list-style-type: none"> <li>a. Equipment and systems that are powered from sources greater than 1000 volts.</li> <li>b. Equipment and systems that PMS or equipment technical manuals designate as requiring greater than 40 cal/cm2 arc flash PPE to verify de-energized.</li> </ul>	Change is incorporated.

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NAVSHIPYD PTSMH		300-2.5.1.11 - 300-2.5.3	Paragraphs 2.5.1.11 through 2.5.3 including Tables 3002-1 and 300-2-2 establish 1000 volts as an ambiguous value. Some sections of the text and tables refer to 1000V or less while other sections refer to 1000V or higher. This leaves the exact value of 1000 volts a gray area and it should be clearly and consistently defined one way or another. Paragraphs 2.5.5.7 and 2.5.5.8 also follow this trend and require clearly defined standards to prevent confusion.	
Paul Mieszczanski		300-2.5.1.11	Changes in the IVV section starting at 300-2.5.1.11 voltage ranges of 30 volts to < 1000 volts, and then > 1000 volts are addressed. {Need to include "equal to" 1000 volts with one of the ranges.} REASON: "Exactly" 1000 volts is not addressed.	Change is incorporated.
Howard Snyder		300-2.5.1.11	Spell out thirty in paragraph heading. Change table reference to "Table 300-2-2."	No change required.
SUBPAC N4		300-2.5.1.11 and 300-2.5.1.12	a. These sections discuss what kinds of equipment/evolutions are considered low and medium risk. Both sections discuss multiple power source equipment being designated by the Commanding Officer as either low or medium risk. Neither article provides concrete examples of what factors should be considered when deciding if something is low or medium risk. Is the expectation for the Commanding Officer to designate every piece of multiple power source equipment onboard as either low or medium risk? If so, this is excessively burdensome. b. <b>Recommend</b> eliminating reference to the Commanding Officer designating low or medium risk equipment and providing concrete criteria to aid the operator in determining if equipment is low or medium risk.	Do not concur. The intent was incorporated based on SUBFORCE's comments.
Howard Snyder		300-2.5.1.12	Spell out thirty in paragraph heading. Change table reference to "Table 300-2-2."	do not concur with table reference change
Howard Snyder		300-2.5.1.3	Change paragraph heading to "Greater than 1000 volts (high risk)." Change table reference to "Table 300-2-2"	Concur with changing table so voltage levels do not overlap.
CESWG		300-2.5.1.3 a	Change the sentence to read; "...sources greater than or equal to 1001 volts and above." This would be congruent with recommended changes identified in item 86 of this review. <i>Review Action:</i> 11-9-10 Done Made >1000 volts	Concur, voltage designations will be changed
Gary Watson		300-2.5.1.3 a	Change the sentence to read; "...sources greater than or equal to 1001 volts and above." This would be congruent with recommended changes identified in item 6 of this review.	Tables and othe verbage shall designate potentials that do not overlap
Dennis Neitzel		300-2.5.1.2	Update first sentence to read "Qualified workers are required..." Add additional sentence to end of paragraph " <u>Rubber insulating gloves with leather protectors shall be worn at all times when testing voltage or for the absence of voltage as part of the energy control procedure, for circuits of 50 volts or more.</u> "	Concur, the intent of this comments is captured in new wording. NSWC is developing a new table.

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John Lastowski		300-2.5.1.2	Delete Paragraph	Concur, intent captured
SUBLANT N4		300-2.5.1.2	<p>Currently: "Performing voltage checks. Personnel are required to conduct IVV checks prior to beginning maintenance on electrical equipment and systems to verify it is de-energized. Equipment is considered energized until IVV checks verify it is de-energized. When performing IVV checks on systems isolated for de-energized work, the general precautions of Section 300-2.3 must be followed as well as the requirements of Table 300-2-1 until the circuit is verified de-energized. STW checks, Section 300-2.5.4, shall be repeated prior to restarting work any time work has been secured and the equipment has been left unattended. "</p> <p>Clarify the statement "work has been secured and momentarily equipment has been left unattended." If the worker leaves to get a tool, does another safe to work check have to be done, etc?</p>	Concur, paragraph has been deleted. Intent of comment re-captured in a new series of paragraphs.
Howard Snyder		300-2.5.4	Change paragraph heading to "Performing IVV checks" and change STW to "Safety Frisk"	Do not concur.
Larry Schultz		300-2.5.4	For section 300-2.5.4 FUSE REPLACEMENT, add a statement to replace fuses with the fuse amperage rating visible so as to have a sight verification that the circuit or equipment protective devise is per design. This is for safety of the circuit or equipment such that it will not be under protected by an over-fused condition or lose power for an acceptable current level by an under-fused condition. Has anyone suggested a fuse rating color scheme, such as the electrical color code used for the resistors. That could help identify at sight the fuse rating and maybe a voltage rating without having to read any small print or stampings. Also offer sight verification when installed as in the standard fuse clips.	No change required. This a best practice, not a technical requirement.
John Lastowski		300-2.5.1.3	Delete Paragraph	Concur, delete paragraph
RPPY		300-2.5.1.3	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Concur
Howard Snyder		300-2.5.1.3	Add paragraph heading "Special precautions for 1000 volts or greater."	The intent of this comment was captured by other changes.
John Lastowski		300-2.5.1.4	Move this section to after the IVV table and reference this section somehow in the IVV requirements.	Do not concur.
NGSB- NN Department X31		300-2.5.1.4	Stray Voltages covered in 300-2.5.1.4 Identification and control of stray voltage of the NSTM 300 info will be covered in a developing X31 Induce Voltage SOP. NSTM 300 and X31 SOP will treat the voltage as an energized circuit until proven be induced with the exception that NSTM 300 determines it PPE by a risk category & table 300 -2-1 (low, medium) and the SOP shall requires all PPE.	Concur, change is incorporated.

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CESWG		300-2.5.1.4.1	"Additionally, the stray voltage could be the result of inadequate isolation." This is misleading to call stray voltage 'inadequate isolation'. Suggest this sentence be deleted. <i>Review Action:</i> 11-9-10 Done	Completed
Wes Bailey		300-2.5.1.4.1	"Additionally, the stray voltage could be the result of inadequate isolation." This is misleading to call stray voltage 'inadequate isolation'. Needs Clarification. Suggest: Insure that there is no inadequate isolation before assuming that the voltage found is stray voltage. <i>Review Action:</i> Perhaps the wording "isolation" is meant in the context of "insulation" or "separation". Would need to read further.	Comment addressed, see prior comment
John Lastowski		300-2.5.1.4.1	The order used for the definitions (a. stray voltage, b. capacitive coupling, and c inductive means) is confusing, because capacitive coupling and inductive means are mechanisms by which stray voltage can occur. Items b. and c. should be subtopics to stray voltage. As it is written now the items listed in a, b, c, and d are all independent definitions.	Concur, new sub-topics added
John Lastowski		300-2.5.1.4.1 a	Update to read "a. Stray Voltage. Voltage present in a circuit intended to have been isolated, usually this voltage is not the result of a direct connection to an energized source (i.e. generator, battery, transformer, etc). Other common terms used to describe stray voltage include: induced voltage, ghost voltage, and phantom voltage. Stray voltages could be confused with inadequate isolation. Electrical isolations may need to be expanded to adequately remove all voltages (i.e., Stray voltages)."	Concur, change is incorporated.
Howard Snyder		300-2.5.1.4.1 a	Delete "Additionally, the stray voltage could be the result of inadequate isolation." per 230 conference.	Concur, deleted
John Lastowski		300-2.5.1.4.1 d	Update to read "d. Capacitive storage (residual voltage). Capacitors are used in electromagnetic interference (EMI) suppression accessories and circuit filters, electrical power, lighting circuits, interior communication, fire control equipment, and various other electronic equipment. These capacitors may retain their charge and result in a residual voltage being present in the circuit."	Concur with new addition
John Lastowski		300-2.5.1.4.2	Section 300-2.5.1.4.2 to Section 300-2.5.1.8 – This series of paragraphs jumps back and forth between stray voltage and test equipment and capacitors with stored energy. Suggest reorganizing the thoughts. For example, 300-2.5.1.4.2 goes with 300-2.5.1.4.4 and 300-2.5.1.4.3 goes with 300-2.5.1.8.	Concur with proposed order of paragraphs, correct numbering.

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John Lastowski		300-2.5.1.4.2	<p>Recommend combining 300-2.5.1.4.2 through 300-2.5.1.4.4. Change to "300-2.5.1.2.2 Discussion" and format as lettered list a - c:</p> <p>a. The stray voltage from capacitive coupling and inductive means can be as high as the voltage of the adjacent conductors when measured with a high impedance meter such as a typical digital voltmeter.</p> <p>b. The charge retained by capacitors directly connected to power circuits may be great enough to cause an electric shock and shall be discharged prior to performing work. When measured with a voltmeter, capacitive storage voltage will tend to slowly lower as the stored energy is dissipated through the impedance of the meter being used. A low impedance meter will tend to bleed this voltage off at a quicker rate. Once capacitive storage is verified as indicated by a minimum of five seconds with steadily decreasing voltage indication, a shorting probe should be used to dissipate the stored energy.</p>	concur, correct numbering.
John Lastowski		300-2.5.1.4.2	<p>c. The use of a low impedance meter or test device will help to identify low current energy sources identified above as stray voltages. The following indications will identify the voltage as a stray voltage from capacitive coupling or inductive means:</p> <p>(1) Analog meter such as a Simpson 260 or equivalent. The magnitude of the voltage will decrease as the meter scale is lowered due to the lowering input impedance of the meter.</p> <p>(2) Fluke 289 digital voltmeter (DVM) or other digital meter with a low impedance mode. The magnitude of the voltage will drop significantly (usually near zero) when the low impedance mode is used. The low impedance mode of the DVM or the use of the Fluke stray voltage eliminator places a 3000 ohm resistance in parallel with the meter's input terminals and therefore a reading of 3 volts would indicate 1 mA is flowing through the 3000 ohm parallel resistance (<math>3V=1mA \times 3000\Omega</math>). The Simpson 260 or equivalent is somewhat more complicated due to varying input impedance with each scale and therefore a conservative approach is used which results in less than 50µA at the meter's terminals. The following indications</p>	concur with new guidance
John Lastowski		300-2.5.1.4.2	<p>will provide assurance that the current is less than 1mA and thus below the threshold of human perception as defined in Paragraph 300-2.1.2.4:</p> <p>a. Simpson 260 or equivalent – less than full scale deflection on the 2.5V scale.</p> <p>b. DVM set to low impedance mode or with a Fluke stray voltage eliminator installed – reading is less than 3 volts.</p> <p>(3) DVM with a Fluke stray voltage eliminator (SV225 or equivalent) installed. The magnitude of the voltage will drop significantly (usually near zero) when taken with the stray voltage eliminator installed.</p>	Concur with changes, additions, discussion, and definitions, Fluke stray voltage eliminator will be assigned a stock number
John Lastowski		300-2.5.1.4.3	<p>Recommend placing paragraph 300-2.5.1.4.3 and 300-2.5.1.7 next to each other for clarity.</p>	Concur with change

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Howard Snyder		300-2.5.1.4.3	Change 'shall' to 'should'	Do not concur
NNSY Code 2330		300-2.5.1.4.4	On page 300-45 in paragraph 300-2.5.1.4.4 once identified as stray voltage and of a magnitude less than 30v then the work should not be considered energized; so are any further actions truly necessary? If not, then say so and delete 300-2.5.1.4.5 (See paragraph 300-2.5.2.2h.(4)).	Partially concur, intent of change is incorporated.
Howard Snyder		300-2.5.1.4.4 a - c	Update a. to read "...Simpson 260 or equivalent-The magnituded of the voltage..." Update b. to read "Digital volt meter (DVM) with a low impedance mode such as a Fluke 289 or equivalant-The magnituded of the voltage will drop significantly..." Update c. to read "DVM with a Fluke stray voltage eliminator installed such as a Fluke SV225 or equivalent-The magnitude of the voltage..."	concur
Howard Snyder		300-2.5.1.4.5	Delete "Fluke" in first sentence and in 300-2.5.1.4.5 b.	Do not concur
John Lastowski		300-2.5.1.4.5	Delete Paragraphs 300-2.5.1.4.5 through 300-2.5.1.1.3.	Concur with deletion
Dennis Neitzel		300-2.5.1.5	Add additional sentence to end of paragraph " <u>This is classified as energized work and all required safety precautions and PPE must be used.</u> "	paragraphs deleted, intent captured in new modifications
Dennis Neitzel		300-2.5.1.6	Update second sentence to read "Shock, <u>arc flash</u> , and fire hazards..."	paragraphs deleted, intent captured in new modifications
NNSY Code 2330		300-2.5.11 and 300-2.5.1.12	On page 300-46 in paragraph 300-2.5.11 & 300-2.5.1.12 allow definitions by the Commanding Officer these may then change from ship to ship and this places an undue burden on shipyard personnel.	No change required
John Lastowski		300-2.5.2	Renumber to 300-2.5.1.3 and reaname "REQUIREMENTS FOR VERIFYING CIRCUITS DE-ENERGIZED LESS THAN 1000 VOLTS.	concur



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NGSB- NN Department X31		300-2.5.2, 300-2.5.2.2 a, 300-2.5.2.2 c, 300-2.5.3, 300-2.5.3.1, TABLE 300-2-1	<p>No Safety Brief is conducted by yard supervisor prior to begin AOV 600vAC and less/greater checks and no low impedance meter (stray eliminator) is required on the job for AOV 600vAC/800vDC less than checks.</p> <p>300-2.5.2 VERIFYING DE-ENERGIZED CIRCUITS LESS THAN 1000 VOLTS.</p> <p>300-2.5.2.2 safely verifying de-energized circuits.</p> <p>a. Ensure a <b>safety brief is conducted by supervisory personnel prior to commencing work</b>. Ensure all involved personnel are properly briefed, understand the work being conducted, and are aware of the associated hazards.</p> <p>c. <b>A low impedance meter, or adapter as described in Section 300-2.5.1.4 shall always be present at the work site during the IVV</b>. This meter is not required to be used for the IVV but shall be available at the immediate work site for stray voltage verification.</p>	concur, no change required.
John Lastowski		300-2.5.2.1	Update to read "300-2.5.1.3.1 Use Table 300-2-1 to determine the appropriate precautions to use for verifying equipment is de-energized prior to maintenance."	Concur with table reference.
Howard Snyder		300-2.5.2.1	Add paragraph heading "PPE requirements." and change table reference to "Table 300-2-2"	No change required.
Paul Mieszczanski		300-2.5.2.2	<p>i. If the unexpected voltage is greater than 30 volts then STOP WORK {ADD: , post a guard} and notify supervisors.</p> <p>REASON: Many critiques and trouble reports mention that a guard was or should have been posted to alert any other person to not come in contact with the energized circuit.</p>	The intent of this comment is incorporated. Supervisor action.
Paul Mieszczanski		300-2.5.2.2	<p>l. If maintenance is secured and the de-energized equipment is left unattended, verify equipment is still DANGER tagged and perform {REPLACE "DANGER tagged and perform" with "de-energized by performing" STW checks, Section 300-2.5.4.</p> <p>REASON: Aligns words with paragraph 2.5.3.2 .q for circuits "greater" than 1000 Volts.</p>	concur, captured in new paragraphs
NNSY Code 2330		300-2.5.2.2	On page 300-48 paragraph 300-2.5.2.2 seems to provide sufficient guidance for performance of the IVV (including stray voltage determination) such that the Corporate Engineering Instruction # CEI -0051-101 "Stray Voltage Handling Procedure During Initial Voltage Verification (IVV).	No change required.
John Lastowski		300-2.5.2.2	Re-number to 300-2.5.1.3.2 and Update to read "Procedure for Safely verifying de-energized circuits less than 1000V."	Concur with re-numbering
John Lastowski		300-2.5.2.2 a	change 'by' to 'including'	Concur

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John Lastowski		300-2.5.2.2 c	Provide SCAT codes and update to read "...Section 300-2.5.1.4 shall be accessible during the IVV. This meter is not required to be used for the IVV but shall be available for stray voltage verification as needed." - Remove requirement to have at all times – that will likely be unachievable.	Concur, meter is not required but shall/(should) be available. NSWG action to include SCAT codes.
CLT Norman		300-2.5.2.2 d	punctuation error.	Concur
John Lastowski		300-2.5.2.2 d	Why must "two separate ground points outside the electrical plane" be tested/identified? This is confusing because only one is used for the subsequent phase- to-ground checks.  Update second sentence to read "...verify resistance between them is less than 1 ohm."	Concur, change is incorporated.
CLT Norman		300-2.5.2.2 e	Recommend including a 6 V DC (Battle lantern) batter battery in addition to the cited 9V DC battery. Based on the availability of the 6V battery.	Intent of this comment is incorporated.
CESWG		300-2.5.2.2 f	Grammar: Wear the correctly rated rubber gloves and leather protectors (delete the comma after gloves). <i>Review Action:</i> 11-9-10 Done	Concur/complete

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Howard Snyder		300-2.5.2.2 d - I	<p>Delete d-f and renumber subsequent items.</p> <p>Update g. to read "d. Perform the IVV using normal shop practices to identify the presence of voltage. Start with a..."</p> <p>Update h. to read "e. Wear the correctly rated rubber gloves on both hands, while verifying a circuit de-energized per Table 300-2-2.</p> <p>Add f. "If unexpected voltage is found during the course of the IVV and indications exist for capacitive storage (indicated voltage lowers steadily for a minimum of five seconds using a low impedance meter) conduct the following:</p> <p>(1) If indication is found during phase to ground checks, discharge the stored energy by installing the ground clip to a known ground and touch the shorting probe to the phase and hold for 10 seconds.</p> <p>(2) If indication is found during phase to phase checks, discharge the stored energy by installing the ground clip to one phase and touch the shorting probe to the other phase and hold for 10 seconds.</p> <p>(3) Remove the ground clip and continue with IVV.</p> <p>Add g. to read "g. If unexpected voltage still exists, it will be checked with a low impedance meter or adapter as described in (3) below to determine if it is stray or real voltage prior to continuing further with the IVV work. The following indications will identify the voltage as a stray voltage from capacitive coupling or inductive means:</p> <p>(1) Analog meter such as a Simpson 260 or equivalent - The magnitude of the voltage will decrease as the meter scale is lowered due to the lowering input impedance of the meter.</p> <p>(2) Digital meter with a low impedance mode such as a Fluke 289 digital voltmeter (DVM) or equivalent - The magnitude of the voltage will drop significantly (usually near zero) when the low impedance mode is used.</p> <p>(3) DVM with a stray voltage eliminator such as a fluke SV225 – The magnitude of the voltage will drop significantly (usually near zero) when taken with the stray voltage eliminator.</p> <p>(4) If for any reason the work site must be left prior to verifying the unexpected voltage is stray voltage than it must be treated a real voltage with the proper notifications, area isolations, and deficiency documentation submitted."</p>	Concur, the intent of these comments have been incorporated
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Howard Snyder		300-2.5.2.2 d - I	<p>Add i. to read "i. if the unexpected voltage is identified as stray voltage and the reading is below the threshold for human perception as defined in (1) and (2) below, than no further action is required prior to continuing wiht the IVV. The presence of stray voltage is to be document in the briefing history sheet and/or deficiency process (such as a DR/DL) as required by the particular activity for historical information and use during subsequent frisks.</p> <p>(1) Simpson 260 or equivalent – less than full scale deflection on the 2.5 V scale.</p> <p>(2) DMV set to low impedance mode or with a stray voltage eliminator installed – reading is less than 3 volts."</p> <p>Add j. to read "It the unexpected voltage is identified as not stray voltage or to exceed the limits stated above than it should be treated as real voltage with proper notification and deficiency documentation. Engineering and/or work control group would review system isolations and provide additional isolation steps and/or WAF controls."</p> <p>Reletter j, k, l to k, l, m.</p>	Partially concur, the intent of some comments have been incorporated
CESWG		300-2.5.2.2 g	<p>Recommend IVV starts with a visual inspection of the external of the equipment and look for any indications that the equipment has power (i.e. lights on, power indication). Then proceed with the door/cover and working inwards.</p> <p><i>Review Action:</i> 11-9-10 Done</p>	Intent of comment is incorporated.
PPEA		300-2.5.2.2 g	<p>a. Comment: The statement should address not breaking the plane while checking equipment on the back of the door. Checking dead equipment on the door can turn the technician's shoulder into the open equipment.</p> <p>b. Rationale: Safety issue.</p>	Do not concur.
Howard Snyder		300-2.5.2.2 g	Update to read "Start IVV with a visual inspection of the exterior of the equipment looking for any indications that the equipment has power(i.e. lights on, power indication etc.) Then proceed with components on door /cover and working inwards."	Intent of comment is incorporated.
Dennis Neitzel		300-2.5.2.2 h	Change first sentence to read "check" not "checked"	Concur, change is incorporated.
CESWG		300-2.5.2.2 h	Recommend this entire paragraph be rewritten to match the Corporate Engineering Instruction 0051-101 for determining stray voltage and capacitive storage discharge.	Paragraph has been modified incorporating the intent of comment
John Lastowski		300-2.5.2.2 h	Update to read "If unexpected voltage is found during the IVV, stop, evaluate the adequacy of the isolation, and notify supervisors."	Concur, change is incorporated.
John Lastowski		300-2.5.2.2 h	Make everything after the first sentence in h item i. Update to read "Check the circuit with a low..."	Concur, change is incorporated.
RPPY		300-2.5.2.2 h	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Concur/incorporated

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Howard Snyder		300-2.5.2.2 h	"check" not "checked"	Concur, change is incorporated.
John Lastowski		300-2.5.2.2 h 4	Update to read "...less than 30 volts, take appropriate actions to prevent inadvertent contact with the voltage, then no further action is required prior to completing IVV checks."	Concur with update, change is incorporated.
John Lastowski		300-2.5.2.2 i	Reletter to letter j. Delete ", then"	Concur, change is incorporated.
John Lastowski		300-2.5.2.2 i	<p>the step to verify tag-out and determine voltage source should come before what to do if the source is determined to be a stray voltage. Correct order and numbering.</p> <p>Step 2 Update to read "De-energize and Danger Tag-out any previously unidentified sources before proceeding."</p> <p>Step 3 Updat to read "Re-perform IVV checks in accordance with Section 300-2.5.2.1 after determining and securing the source of the voltage.</p>	Concur, change is incorporated.
John Lastowski		300-2.5.2.2 k	Reletter to letter l. Update to read "Maintenance may now begin. PPE is no longer required and FPB and electrical safety boundaries can be relaxed."	Concur, change is incorporated.
John Lastowski		300-2.5.2.2 l	<p>Reletter to letter m. Update to read "If maintenance is secured and the de-energized equipment is left unattended, verify equipment is still de-energized and perform STW checks, Section 300-2.5.4.</p> <p>Recommend changing this section to "If maintenance is secured and the de-energized status of the equipment condition is in doubt, verify equipment is still DANGER tagged and perform STW checks, section 300-2.5.4 ."</p>	Concur, change is incorporated.
Howard Snyder		300-2.5.2.2 l	"Safety Frisk" not "STW"	Do not concur.
CLT Norman		300-2.5.3	title should be bolded	Concur, change is incorporated.
John Lastowski		300-2.5.3	Renumber to and reword "300-2.5.1.4 REQUIREMENTS FOR VERIFYING CIRCUITS DE-ENERGIZED GREATER THAN 1000 VOLTS."	Concur, change is incorporated.
NGSB- NN Department X31		300-2.5.3	<p>The non-contact voltage detector is held within the proximity of the connections/conductors (8" to 11") per the manufactures instructions. The noncontact detector has limited use and may not indicate through grounded equipment or shielded conductors.</p> <p>300-2.5.3 VERIFYING DE-ENERGIZED CIRCUITS GREATER THAN 1000 VOLTS. (3) Hold proximity meter adjacent to equipment being checked to verify it is de-energized.</p>	Change is incorporated.

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John Lastowski		300-2.5.3.1	Renumber and update to read "300-2.5.1.4.1 Use <b>Table 300-2-1</b> to determine the appropriate precautions to use for verifying equipment is de-energized prior to maintenance."	Concur, change is incorporated.
RPPY		300-2.5.3.1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Incorporated
Howard Snyder		300-2.5.3.1	Two paragraphs have this number. Update second paragraph number to 300-2.5.3.2 and add paragraph heading "PPE Requirements."	Concur, paragraph sequence corrected.
Johnathan Gatliff		300-2.5.3.2	discusses the use of a proximity voltage tester. Problems with the tester: a. Model listed for use by NSTM 300 is the Salisbury model number 4356. Salisbury Company states that voltage will not be detected from the outside of the switchboards as required by 2.5.3.2.e. If no voltage detected, workers are instructed to proceed with checking the switchboard dead using a high voltage probe. If proximity detector shows no voltage present from the outside of the switchboard, workers could believe there is no voltage present when there actually is voltage inside the switchboard. Proximity voltage tester must come within a few inches of voltage and will not detect beyond any shielding. b. Workers still have to take same electrical safety precautions and verify switchboard de-energized with or without the proximity tester. I don't really see what this buys us? It adds a superfluous step to a procedure that is already adequate for IVV checks, especially when the detector will not detect voltages from outside the switchboard.	Concur, change is incorporated.
Johnathan Gatliff		300-2.5.3.2	c. How is a worker going to test this on a known live source for >1000 Volts applications? The 4356 is not auto ranging and therefore would require the worker to change ranges to verify proper operation. Does not give 100% confirmation the voltage tester works in the range necessary for naval applications. d. The 4356 is not auto ranging. If the worker does not have the correct range selected, the proximity detector may not detect voltage present when in fact it is present.	Incorporated.
CESWG		300-2.5.3.2	WARNING statement following this paragraph is confusing. In order to do the IVV you have to take a conductive object closer than 2 feet (electrical leads and IVV equipment). Not sure what this statement is trying to say, please clarify.	No change required.
CESWG		300-2.5.3.2	300-2.5.3.2 has two e. sentences. This will require changing all paragraphs following the first (e) after all other changes have been made	Concur, change is incorporated.
John Lastowski		300-2.5.3.2	Renumber, and update to read "300-2.5.1.4.2 Procedure for Safely verifying de-energized circuits greater than or equal to 1000 Volts."	Concur, change is incorporated.

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John Lastowski		300-2.5.3.2	<p>Make paragraph a lettered list under new 300-2.5.1.4.2. Main paragraph becomes lettered item a, add item b and reletter old 300-2.5.3.2 a-q.</p> <p>300-3.5.1.4.2.1 a "Perform IVV checks on circuits greater than 1000 Volts. Work (not including IVV) on energized..."</p> <p>b. Safety brief. Ensure a safety brief is conducted including supervisory personnel prior to commencing work. Ensure all involved personnel are properly briefed, understand the work being conducted, are qualified to perform the work, and are aware of the associated hazards.</p>	Concur, change is incorporated.
John Lastowski		300-2.5.3.2	<p>Update warning before old 300-2.5.3.2 a to read "<b><u>WARNING</u></b> <b>DO NOT approach or take a conductive object without an approved insulating handle closer than 2 feet to potentially energized exposed equipment without proper PPE.</b>"</p>	Concur, change is incorporated.
John Lastowski		300-2.5.3.2	<p>Update warning before old 300-2.5.3.2 e to read "<b><u>WARNING</u></b> <b>Not all voltage testers are rated for greater than 1000 volts. Use Appendix 300-I to determine the correct voltage tester to use. Use of incorrectly rated test equipment can result in arc blast, equipment damage, or personnel injury.</b>"</p>	Concur, change is incorporated.
John Lastowski		300-2.5.3.2	Delete NOTE before old 300-2.5.3.2 e.	Concur, change is incorporated.
John Lastowski		300-2.5.3.2	<p>Add warning before old 300-2.5.3.2 e to read "<b><u>WARNING</u></b> <b>When using a proximity voltage tester on the outside of a switchboard you may detect voltages from other energized sources. A supervisor must determine what Steps to take when voltage is indicated on the proximity voltage tester being used on the outside of a switchboard. This could indicate damaged equipment, inadequate grounding of the enclosure, or merely represent a false-positive result. Equipment should be treated as energized until proven otherwise by use of a properly functioning voltmeter.</b>"</p>	Concur, change is incorporated.
John Lastowski		300-2.5.3.2	Delete warning before 300-2.5.3.2 e 1.	Concur, change is incorporated.
NGSB- NN Department X31		300-2.5.3.2	<p>Ground cluster installed for greater than 600vAC equipment is required to have a red tag hung on it.</p> <p>n. If applicable, install a grounding cluster, device or activate installed grounding switches. Hang a CAUTION tag per ref (b) if installing a ground cluster.</p>	Intent of comment is incorporated.
Howard Snyder		300-2.5.3.2	Update paragraph number to 300-2.5.3.3. Update paragraph heading to "Perform IVV voltage checks..." Update first sentence to read "Work other than IVV on energized equipment..."	Intent of comment is incorporated.

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CLT Norman		300-2.5.3.2 a	recommend rewording first sentence to read "...de-energized by opening circuit breakers, positioning switches, and removing fuses of all possible sources..."	Comment captured/incorporated in other modifications
Paul Mieszczanski		300-2.5.3.2 and 300-2.5.4	<p>300-2.5.3.2 Perform IVV checks on circuits greater than 1000 Volts.</p> <p>q. If maintenance is secured and the de-energized equipment is left unattended, verify equipment is still de-energized by performing STW checks, Section 300-2.5.4.</p> <p>300-2.5.4 SAFE TO WORK VOLTAGE CHECKS</p> <p>300-2.5.4.1 STW checks are required whenever a verified de-energized work area has been left unattended. The following are the minimum requirements to perform STW checks:</p> <p>a. Re-verify the tag-out tags are still hanging on isolations. This does not necessitate a tag-out audit, but instead a spot check of tags. {DELETE THIS LINE or only make it applicable during Ship's Force work without a WAF.}</p> <p>b. Verify the work documents are still applicable (i.e. Work Authorization Form (WAF), Maintenance Requirement Card (MRC), Formal Work Package (FWP), etc).</p> <p>c. Wear the properly rated rubber gloves and leather outer gloves, if applicable, to perform the STW check. These gloves will be the same rated gloves that were worn during the IVV checks, Table 300-2-1.</p> <p>d. Use properly rated rubber insulating material on the deck.</p>	Q is now "S" Paragraph modified incorporating intent of comment
Paul Mieszczanski		300-2.5.3.2 and 300-2.5.4	<p>e. Use a properly rated multi-meter to perform a spot check for voltages. Ensure that the multi-meter has been verified on a known source prior to and after use, Paragraph 300-2.5.2.e.</p> <p>f. Once the work area has been re-verified de-energized, it is safe to work. REASON: The mechanic cannot be expected to verify all tags, unless the tags are involved with a small scale component or equipment isolation, and the tags are all nearby and the tagged components under isolation are known to the mechanic as the verifier. Verification via "Spot Checking" means to sample or investigate quickly or at random. Spot checking cannot be relied upon under the Shift Operations Management System of the TUM, when a single tag is shared for multiple jobs. Rather, it is the "open" WAF/TWD, which "means the equipment is still authorized to be worked", which provides the verification, as we have told OSHA at the SES level. We have made it known to DASN, DoD, OMB &amp; OSHA that we cannot afford to have the Repair Activity Representative nor mechanic do this for "system" scale isolations under system scale WAFs.</p>	Paragraph modified incorporating intent of comment



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Paul Mieszczanski		300-2.5.3.2 and 300-2.5.4	A tag-out audit is the only way to accomplish a meaningful spot check of tags for the large scale isolation. A spot check may be able to be done on a small scale component or equipment isolation, when the tags are all nearby, not shared with other jobs, and the components under isolation are known to the mechanic as the verifier, but cannot be mandated for all situations, without greater than a \$300M annual cost for all work scenarios under this manual.	Intent of this comment is incorporated.
Dennis Neitzel		300-2.5.3.2 c	Update first and last sentences to read " <u>first aid and</u> CPR..."	There is a qualification for first aid, certification for CPR. No change required.
CESWG		300-2.5.3.2 c	Line 4: Erect "boundaries"... (Replace barriers with boundaries. Boundaries are used in the TABLES and throughout this document, not barriers) <i>Review Action:</i> 11-9-10 Done	Do not concur, semantics.
CESWG		300-2.5.3.2 c	WARNING statement following this paragraph 2nd Line: Use Appendix 300-I "for guidance" to determine... Also, Appendix I should give guidance in paragraph 2.5.3.3 EQUIPMENT CERTIFICATION on ensuring the meter are calibrated and not past due. <i>Review Action:</i> 11-9-10 Done	Concur, accomplished. This document does not address calibration requirements.
Howard Snyder		300-2.5.3.2 d	Change 'area' to 'boundary', 'barriers' to 'a boundary' and 'barrier' to 'boundary'	No change required.
Howard Snyder		300-2.5.3.2 d	Change warning to read "...Appendix 300-I for guidance to determine..."	No change required.
Jim Kaufman		300-2.5.3.2 e	the proximity tester noted will not detect voltage from outside the switchgear per conversations with the OEM. The recommended model, type, and the procedure should be further evaluated to allow the use of a proximity tester.	Concur, change is incorporated.
CLT Norman		300-2.5.3.2 e	there are grammatical and punctuation errors in the "Warning".	concur/corrected
CLT Norman		300-2.5.3.2 e	There are two 300-2.5.3.2e's.	concur/corrected
CNSL N43		300-2.5.3.2 e	Paragraph (Para) 300.2.5.3.2.e – there are presently two Para's with this numbering. Our comment is in regard to the first Para 300.2.5.3.2.e sub Para (3) – calls for the use of a proximity voltage tester. Since this is new to many of our Sailors, perhaps we need to note that and perhaps reinforce that this is only applicable for use on systems greater than 1,000V and is NOT a substitute for an IVV.	This has been corrected via comments incorporated by Lastowski below
John Lastowski		300-2.5.3.2 e 1	Appendix I does not define the nomenclature of any equipment as a proximity voltage tester.	Do not concur, appendix I <i>has listed "Hubble multirange, Non Contact, Proximity Type</i>
RPPY		300-2.5.3.2 e 1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Incorporated via Lastowski
CESWG		300-2.5.3.2 e 5	Grammar: ...equipment, then "proceed" (not precede). <i>Review Action:</i> 11-9-10 Done	Concur, change is incorporated.
Howard Snyder		300-2.5.3.2 e	Update warning to read "steps" not "Steps" In e.5 change 'precede' to 'procede'	Concur, change is incorporated.
John Lastowski		300-2.5.3.2 e 6	Update to read "...STOP WORK and notify the appropriate supervisor. The source of voltage must be evaluated before proceeding..."	Concur, change is incorporated.

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CESWG		300-2.5.3.2 f	Line 2: Grammar: Appendix 300-I, can be used "to" verify proper operation... (add to) <i>Review Action:</i> 11-9-10 Done	Concur, change is incorporated.
CLT Norman		300-2.5.3.2 f	Current 300-2.5.3.2f is missing the word "to", and should read "...can be used to verify proper operation..."	Concur, change is incorporated.
John Lastowski		300-2.5.3.2 f	Appendix I does not list a portable high voltage power supply or piezo verifier. Also, change second sentence to read, ", can be used to verify ...".	Incorporated.
RPPY		300-2.5.3.2 f	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Concur, incorporated
Howard Snyder		300-2.5.3.2 f	Update to read "...can be used to verify..."	Concur, change is incorporated.
Howard Snyder		300-2.5.3.2 g	Change table reference to "Table 300-2-2"	No change required.
Howard Snyder		300-2.5.3.2 h	Update to read "...for all three phases as follows:"	Concur, change is incorporated.
CLT Norman		300-2.5.3.2 h 3	Recommend rewording this sentence to read "...by connecting the other high voltage tester probe to each phase of the equipment to be tested." The way it's currently written it doesn't indicate the third phase should be checked.	concur with changing (K.3) to read "each" phase
Dennis Neitzel		300-2.5.3.2 i 1	update to read using not Using	concur with changing capitalization
CESWG		300-2.5.3.2 i 1	Grammar: delete the d. at the beginning of the sentence. <i>Review Action:</i> 11-9-10 Done	Concur, change is incorporated.
CLT Norman		300-2.5.3.2 i 1	Recommend moving step 300-2.5.3.2i(1) to become its own step between 300-2.5.3.2(g) and (h) and reword current step 300-2.5.3.2i(2) to read "...to a solid ground (identified in step above)."	No change required.
RPPY		300-2.5.3.2 i 1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	concur
Howard Snyder		300-2.5.3.2 i 1	Delete 'd.'	concur/incorporated
John Lastowski		300-2.5.3.2 i 2	Add a step to make sure meter is changed back from resistance to voltage scale prior to connecting to a phase.	Do not concur, it is a different meter.
John Lastowski		300-2.5.3.2 k	Update to lettered list n. and update to read "...perform IVV checks on those circuits rated less than 1000 volts per <b>Section 300-2.5.2</b> as required.	Concur, change is incorporated.
John Lastowski		300-2.5.3.2 l	Update to lettered list o. Updated to read "If any voltages are found, make sure that an energized condition does not exist. Stop work, verify the isolation and notify supervisory personnel. Sources of voltage may be feedback from equipment, fed by switchboard or control circuits which have not been de-energized. De-energize any identified sources before proceeding then repeat IVV.	Concur, change is incorporated.
John Lastowski		300-2.5.3.2 m	This implies permission to use a 25kV safety-shortening probe for stray voltages. Also, why use a shorting probe at all if no voltage is found? Consider making this item a subtopic of the previous step.	No change required.

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John Lastowski		300-2.5.3.2 m	Change note after 300-2.5.3.2 m to a warning and update to read " <b>WARNING</b> <b>If installing a grounding cluster or grounding device ensure that you consult the applicable system or component technical documentation for proper ground equipment configuration. Improperly sized conductors or improper connections could result in equipment damage or personnel injury.</b> "	Concur, change is incorporated.
Jim Kaufman		300-2.5.3.2 n	where are approved ground clusters listed? Installation procedure?	Do not concur, Grounding Ball Stud is neither designed, nor proven.
John Lastowski		300-2.5.3.2 n	Update to lettered list q. and update to read "If applicable, install a grounding cluster, grounding device or activate installed grounding switches. Hang a CAUTION tag per ref (b) if installing a grounding device."	Concur, change is incorporated.
John Lastowski		300-2.5.3.2 n	Add warning after 300-2.5.3.2 n "WARNING Failure to remove the installed grounding cluster or grounding device upon system energization may result in equipment damage or personnel injury."	Concur, change is incorporated.
CLT Norman		300-2.5.3.2 n and 300-2.5.3.2 o	Recommend removing steps 300-2.5.3.2n and 300-2.5.3.2o. This will remove the allowance to use grounding clusters. N9(West)'s position is that this is a safety issue where ship's will continue to use locally produced grounding clusters that are inadequate for their intended purpose, and will vaporize if needed, causing more damage.	Do not concur, new procedure includes tags for installing ground devices
CESWG		300-2.5.3.2 o	Grammar: ...MAINTENANCE ENSURE THE GROUNDING CLUSTER "OR DEVICE" IS... (add 'or device' since that is what is being called out in previous paragraphs). <i>Review Action: 11-9-10 Done</i>	Concur, change is incorporated.
CLT Norman		300-2.5.3.2 o	"AT" should be bolded.	OBE based on other changes.
John Lastowski		300-2.5.3.2 o	Delete item.	Concur, change is incorporated.
Howard Snyder		300-2.5.3.2 o	update to read "... <b>CLUSTER OR DEVICE IS REMOVED</b> ..."	OBE based on other changes.
John Lastowski		300-2.5.3.2 p	Update to lettered list r. And update to read "Maintenance may now begin FPB, PPE, and electrical safety boundaries can be relaxed." Delete 2nd sentence.	Concur, change is incorporated.
Howard Snyder		300-2.5.3.2 q	Change "STW" to "Safety Frisk"	Do not concur, no change required.
NAVSHIPYD PTSMH		300-2.5.3.3 a	Paragraph 300-2.5.3.3.a, one of the paragraph numbering errors on page J-13, one of the page numbering errors should include rubber blankets in the certification rotation to ensure they maintain their specified rating.	No change required. No recertification is required.
Jim Kaufman		300-2.5.4	Safe to Work, the paragraph should be clarified for the procedure to follow for >1000V or <1000V.	> 1000, and <1000 has been, will be clarified throughout document.

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Johnathan Gatliff		300-2.5.4	Safe To Work (STW) Checks: Does this apply to systems >1000 volts? If not, I recommend a statement in this section stating that this is for <1000 Volt systems only. If it does apply to systems >1000 Volts, I would recommend more PPE for STW checks.	No change required.
CESWG		300-2.5.4	Change "Safe to Work" to Safety Frisk all paragraphs. Shipyard and Ship's Force accepted terminology <i>Review Action:</i> 12-1-10 Changed all paragraphs stating "Safe to work" and "STW" terminology	Do not concur, no change required.
John Lastowski		300-2.5.4	Do I need to do STW checks if I was in the 30 volts or less situation for IVV? I could not see where it exempted me. You would then end up with IVV without gloves or matting but the STW procedure requires both in 2.5.4.1.c and 2.5.4.1.d.	Change is incorporated.
John Lastowski		300-2.5.4	Update title to read "WORK (STW) VOLTAGE CHECK REQUIREMENTS"	Change is incorporated.
Howard Snyder		300-2.5.4	Change "SAFE TO WORK" to "SAFETY FRISK"	No change required.
SUBPAC N4		300-2.5.4	a. This section adds Safe to Work (STW) checks as new requirement to Fleet electrical safety practices and requires STW checks "whenever a verified de-energized work area has been left unattended." b. While STW checks in some form may be a useful addition to Fleet electrical safety practices, the as-written requirement is excessively burdensome. It is unreasonable to mandate STW checks following any interruption of work, no matter how brief, during all de-energized work, no matter how minor in scope. c. <b>Recommend</b> eliminating STW checks or defining a length of interruption and/or scope of de-energized work for which STW checks are required.	OBE based on other changes.
CLT Norman		300-2.5.4.1	Add a step requiring the use of a properly rated faceshield.	No change required.
EMCM Cox		300-2.5.4.1	Clarifying what constitutes "unattended" would be beneficial. If a worker leaves to retrieve a tool and is gone for only a few minutes considered unattended?	OBE based on other changes.

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Dwayne Wood		300-2.5.4.1	<p>4. Paragraph 300-2.5.4.1 (under Safe To Work (STW) Voltage Checks) states to re-verify that the tag-out tags are still hanging on isolations as a required action when performing a STW check.</p> <p>a. This means spot checking all danger tags every time the shop leaves the worksite! This will require a significant amount of time and personnel and will drastically extend the duration of electrical maintenance. This needs to be evaluated for cost as well as impact to ship's schedules and shipyard personnel resources before implementing.</p> <p>b. Preferably, this needs to get removed as there is no value added. Sounds like this is a mirror of the draft version of the OSHA LOTO+ regulation. C-246 recently replied to NAVSEA who then replies to OMB that the cost of implementing tag checks prior to work was cost and schedule prohibitive.</p>	Do not concur, not consistent with OSHA tags plus requirement. This is a clarification of existing NSTM requirements.
Jeffery Watson		300-2.5.4.1	<p>STW checks are required whenever a verified de-energized work area has been left unattended. The following are the minimum requirements to perform STW checks:</p> <p>a. Re-verify the tag-out tags are still hanging on isolations. This does not necessitate a tag-out audit, but instead a spot check of tags.</p> <p>b. Verify the work documents are still applicable (i.e. Work Authorization Form (WAF), Maintenance 300-51 Requirement Card (MRC), Formal Work Package (FWP), etc).</p> <p>(Requires workers to verify Tags and WAF are active and hanging each time the worksite is left unattended)</p>	No change required.
John Lastowski		300-2.5.4.1	<p>Make this text part of 300-2.5.4 instead of a single sub paragraph under that paragraph. Update to read "STW checks are required whenever equipment or circuits have been verified de-energized and the status of the equipment's isolation comes into question due to long periods of isolation when no work has been completed, if isolation have changed when work scope or boundaries have not changed, if work scope changes, or if modifications have been performed on the affected equipment or circuits. The following are the minimum requirements to perform STW checks:"</p>	Concur, change is incorporated.
John Lastowski		300-2.5.4.1	<p>The following are the minimum requirements to perform STW checks: - Recommend changing this to state: "The following are examples of STW checks. The extent of what STW checks are performed may vary depending on the basis for questioning the isolation, the complexity of the circuits involved, and the risk posed by the work to be performed:"</p>	No change required.

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Alan D. Finley		300-2.5.4.1	<b>Category:</b> Safe To Work (STW) Voltage Checks. <b>Comment:</b> The term "unattended" is not clearly defined. <b>Recommendations:</b> Clarify what is meant by unattended and whether STW checks are required if tagout boundaries do not change. If the intent is that STW checks must be performed if the worker leaves the work area for any reason, specifically state this requirement.	OBE based on other changes.
Howard Snyder		300-2.5.4.1	Change to read "Safety frisk check requirements. Safety Frisk checks are required...to perform Safety Frisk checks:"	Do not concur, no change required.
John Lastowski		300-2.5.4.1 a	Update second sentence to read "This does not necessitate a plant-wide tag-out audit, but instead verification that the tags required for the associated isolation remain in place."	Concur, change is incorporated.
John Lastowski		300-2.5.4.1 b	Update to read "Verify the work documents are still applicable and have not been altered since work stopped (i.e. Work Authorization Form (WAF), Tag-out Record Sheets (TORs), Maintenance..."	Concur, change is incorporated.
Howard Snyder		300-2.5.4.1 c	Change "STW" to "Safety Frisk" and update table reference to Table 300-2-2.	Do not concur, no change required.
John Lastowski		300-2.5.4.1 e	Update reference should read Paragraph 300-2.5.2.2.g	No change required, deleted reference.
RPPY		300-2.5.4.1 e	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	concur
NGSB- NN Department X31		300-2.5.5	Fuse removal/installation is performed in respect to the type of fuse and the location of the fuse and the vicinity of energized parts/equipment.	No change required.
John Lastowski		300-2.5.5.1	Add title "Discussions:" move paragraphs 300-2.5.5.2 - 1st sentence of 300-2.5.5.4 to lettered list as follows: a. Fuses are safety devices installed in power and lighting circuits and in control circuits to protect the equipment and circuits from damage due to excessive current. Guidance given in technical manuals for user equipment (such as weapon systems, switchboards, motor controllers, etc.) should be followed when removing and replacing fuses in the user equipment control circuits. b. When a fuse is removed from a circuit, it shall be replaced with a fuse of the proper type (A, B, or C). Never replace with a higher fuse current rating. Never replace a Type C fuse with a Type A or B fuse, or short out a blown fuse. Type C fuses are designed to interrupt 100,000 amps of fault current, but Type A or B fuses can only interrupt 10,000 amps. Replacing a Type C fuse with a Type A or B fuse could result in fuse explosion, fire or damage to the user equipment or distribution system the fuse was intended to protect	Concur, change is incorporated.

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John Lastowski		300-2.5.5.1	<p>c. Most shipboard fuses, especially those in the power and lighting distribution system, have silver-plated ferrules to minimize corrosion in the shipboard environment. Some Navy equipment, especially commercial or commercially-derived equipment, may be furnished with fuses that do not have silver-plated ferrules. Corrosion between fuse ferrules that are not silver-plated and the fuse clips can cause high resistance and local heating that can cause the fuse link to melt, and can affect other adjacent fuses. A silver-plated fuse or fuse clip must be replaced with a silver-plated fuse or fuse clip respectively. Silver-plated metals develop a black oxide coating over time which does not affect performance and should not be removed. Silver plating is designated by the letter "S" following the current rating of the fuse (e.g., F60C 500V 5AS).</p> <p>d. Unless permitted by the exceptions of Sections 300-2.5.5.5 through 300-2.5.5.8, fuses should be removed or replaced only when the circuit is verified de-energized, no voltage at the line side fuse clips.</p>	Concur, change is incorporated.
John Lastowski		300-2.5.5.1	<p>New 300-2.5.5.1 b and 300-2.5.5.2 b: The detailed discussion explaining why you cannot replace a Type C fuse with a Type A or Type B fuse implies it is ok to replace a Type A or B fuse with a Type C fuse. The 3rd sentence appears to prohibit this. What is the intent? Suggest clarifying accordingly.</p>	I read the intent is to replace fuses with proper types fuse Always replace with the proper type. The example was give of what could happen, clarified example
John Lastowski		300-2.5.5.1	<p>Add paragraph title Requirements and update to read (Lettered items e-i are paragraphs 300-2.5.5.4 - 300-2.5.5.8: 300-2.5.5.1 Requirements: Use Table 300-2-2, to determine the appropriate precautions to use for fuse removal and replacement.</p> <p><b><u>WARNING</u></b> <b>Even with fuses and fuse holder carriages removed, a hazardous electrical potential may still exist at the fuse holder power connections.</b></p> <p>b. When a fuse is removed from a circuit, it shall be replaced with a fuse of the proper type (A, B, or C). Never replace with a higher fuse current rating. Never replace a Type C fuse with a Type A or B fuse, or short out a blown fuse. Type C fuses are designed to interrupt 100,000 amps of fault current, but Type A or B fuses can only interrupt 10,000 amps. Replacing a Type C fuse with a Type A or B fuse could result in fuse explosion, fire or damage to the user equipment or distribution system the fuse was intended to protect.</p>	Concur, change is incorporated.

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John Lastowski		300-2.5.5.1	<p>c. A silver-plated fuse or fuse clip must be replaced with a silver-plated fuse or fuse clip respectively. Silver-plated metals develop a black oxide coating over time which does not affect performance and should not be removed. Silver plating is designated by the letter "S" following the current rating of the fuse (e.g., F60C 500V 5AS).</p> <p>d. No fuses should be removed or replaced in circuits that are energized unless permitted by the exceptions of <b>Sections 300-2.5.5.5 through 300-2.5.5.8</b>.</p> <p>e. Requirements for Removing or Replacing Fuses in Verified De-Energized Circuits. Unless permitted by the exceptions of <b>Sections 300-2.5.5.5 through 300-2.5.5.8</b>, fuses should be removed or replaced only when the circuit is verified de-energized, no voltage at the line side fuse clips. The following procedure should be used to remove or replace fuses in de-energized circuits:</p> <p>(1) Verify that the panel is de-energized per <b>Section 300-2.5.1</b>, if not already accomplished. Follow the tag-out procedures of <b>Section 300-2.3.3</b> and ref <b>(b)</b>.</p> <p>(2) Remove or replace fuses using the fuse pullers listed in <b>Appendix 300-I</b>.</p> <p>(3) After fuse replacement, close the cover prior to energizing the panel.</p>	Concur, change is incorporated.
John Lastowski		300-2.5.5.1	<p>(4) If the replacement fuse opens (blows), then a fault probably exists which must be troubleshoot and corrected prior to replacing with another fuse.</p> <p>f. Requirements for internal dead-front fuseholders:. For fuses in plastic insulated fuse holders located internal to switchgear, panels, controllers, the enclosure should be de-energized then follow the precautions of <b>Paragraph 2.5.5.4</b> for fuse removal and replacement. If the switchgear, panel or controller cannot be de-energized then take the appropriate safety precautions per <b>Paragraph 300-2.5.5.6</b>. After fuse removal or replacement, the circuit should be energized only when the cover over the fuses is replaced.</p> <p><b><u>WARNING</u></b>  <b>When removing and replacing fuses in an energized circuit, personnel will come in close proximity to energized fuse clips and cable terminations. An arc flash or fuse explosion can result if a short is present and the load is not secured, causing personal injury or fire. Strict adherence to procedures is essential to maintain personnel safety and to avoid equipment damage.</b></p>	Concur, change is incorporated.



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John Lastowski		300-2.5.5.1	<p>g. Exceptions for critical equipment. Fuses should always be removed from a verified de-energized panel. However, removing or replacing fuses in energized circuits is permitted if de-energizing the circuits to the line side fuse clips would require shutdown of critical equipment. The Commanding Officer will designate which critical equipment is necessary for safe ship's operation or performance of the ship's mission. In these instances, the precautions outlined below shall be followed. ("Vital equipment" which is supplied power from multiple sources may not necessarily be considered "critical" for purposes of energized fuse replacement). Remove or replace fuses in an energized circuit as follows:</p> <p>(1) Remove all loads on the circuit by opening all switches and/or unplugging all power cords prior to opening the fuse panel cover.</p> <p>(2) Follow the requirements of <b>Table 300-2-2</b> for fuse removal and replacement.</p> <p>(3) If replacing a blown fuse in a fuse panel, first check the load side fuse clips of the circuit with the blown fuse using a multi-meter to ensure there is no voltage.</p>	Concur, change is incorporated.
John Lastowski		300-2.5.5.1	<p>(4) If removing a fuse to isolate user equipment for maintenance, <b>DANGER</b> tag the fuse per <b>Section 300-2.3.3</b> and <b>ref (b)</b>.</p> <p>h. Lowering or raising instrument transformer primary fuses greater than 1000 volts. Due to the nature of the work the insulation of the fuse holder carriages and enclosures, and the physical layout of the enclosure when lowering or raising greater than 1000 volt fuses for maintenance or operations, follow the requirements of <b>Table 300-2-2</b> for fuse raising and lowering.</p> <p>i. Exceptions for dead-front fuseholders. Exceptions to the requirements of <b>Section 300-2.5.5.4</b> and <b>Table 300-2-2</b> are permitted for fuses in plastic insulated fuse holders located on external surfaces of switchgear, panels, controllers, or other equipment, with no additional safety precautions, provided that all the following conditions are met:</p> <p>(1) The circuit is rated 1000 volts or less.</p> <p>(2) The fuse holders are in good condition.</p> <p>(3) The fuse holders have not been modified for testing purposes.</p>	Concur, change is incorporated.
John Lastowski		300-2.5.5.1	<p>(4) For circuits with load currents 10 amps or less, fuses may be removed or replaced without de-energizing the load.</p> <p>(5) For circuits with load currents greater than 10 amps, fuses may be removed or replaced provided the circuit is not under load or is drawing less than 10 amps.</p> <p><b>WARNING</b> <b>DO NOT use a bare hand to grab a fuse that remains in the fuse barrel when the fuse holder is removed.</b></p>	Concur, change is incorporated.

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Howard Snyder		300-2.5.5.1	Change table reference to "Table 300-2-3"	Do not concur, 300 2.2 is correct
EMCM Cox		300-2.5.5.2	Paragraph does not state the requirement to "never replace a fuse with one of a lower voltage rating".	Concur, change is incorporated.
John Lastowski		300-2.5.5.2	Delete paragraph.	Concur, change is incorporated.
Howard Snyder		300-2.5.5.2	Add paragraph heading "Fuse replacement by type and rating."	Do not concur, no change required.
John Lastowski		300-2.5.5.3	Delete paragraph.	Concur, change is incorporated.
Howard Snyder		300-2.5.5.3	Add paragraph heading "Replacement of silver plated fuses."	Do not concur, no change required.
CNSL N43		300-2.5.5.3	Para 300.2.5.5.3 discusses silver fuse ferrules but does not discuss replacing non silver ferrules as it should. Silver plated fuse ferrules only with silver fuses and non-silver with non-silver, right? This para is cloudy.	No change required.
Alan D. Finley		300-2.5.5.4 d	<b>Category:</b> Removing or Replacing Fuses in Verified De-Energized Circuits. <b>Comment:</b> It is unclear why the fuse precaution is in NSTM 300 but a similar precaution in reference (c) (320-2.2.6.4.c), regarding tripped circuit breakers, is not. <b>Recommendations:</b> Add circuit breaker precaution from reference (c) into NSTM 300.	This document does not address breaker operations, only breaker racking. No change required.
Johnathan Gatliff		300-2.5.5.5	Warning statement says "ARCH" instead of "ARC".	concur, corrected/incorporated
CLT Norman		300-2.5.5.5	Warning in this step should read "...A flash, arcing, or fuse explosion..."	concur/incorporated
CLT Norman		300-2.5.5.5 c	the requirement to have a low impedance meter present at the work at the work site during the IVV is too stringent. Having the meter available for use should be sufficient.	Concur, change is incorporated.
Dennis Neitzel		300-2.5.5.5 WARNING	Correct second sentence to read arc not arch	Concur, change is incorporated.
CLT Norman		300-2.5.5.6	The Warning note from 300-2.5.5.6 is missing a word and should read "Removing or replacing fuses from an energized switchboard greater than 1000 volts".	Concur, change is incorporated.

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Paul Mieszczanski		300-2.5.5.6	<p>INSERT "that" the fuse "was removed" by one of the following methods:  300-2.5.5.6 Exceptions for critical equipment. Fuses ...  d. If removing a fuse to isolate user equipment for maintenance, DANGER tag "that" the fuse "was removed" per Section 300-2.3.3 and ref (b). in the following manner:  For dead front loaded fuses, remove the fuse and cartridge. Tape over the fuse holder and then attach the Danger tag in the tape.  For fuses removed from within a power panel, attach the danger tag to the power panel over the label plate in a manner that allows viewing of the plate beneath the tag.  <a href="http://www.submepp.navy.mil/jfmm/tum/tum_training.htm">http://www.submepp.navy.mil/jfmm/tum/tum_training.htm</a>, "Posting tag-outs" training file provides a pictorial of these tag-outs.</p>	This chapter references the TUM, not appropriate for this chapter.
John Lastowski		300-2.5.5.6	Delete warning after 300-2.5.5.6. - Warning should say not to do it energized for greater than 1000V?	Concur, change is incorporated.
John Lastowski		300-2.5.5.6	NAVSEA 05 should provide a current limit above which fuses can not be removed in this case.	Do not concur, added requirement not to pull under any load.
RPPY		300-2.5.5.6	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	concur/incorporated
RPPY		300-2.5.5.6	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	concur/incorporated
SUBLANT N4		300-2.5.5.6	<p>Change to: "Exceptions for critical equipment. Fuses should always be removed from a verified de-energized panel. However, removing or replacing fuses in energized circuits is permitted if de-energizing the circuits to the line side fuse clips would require shutdown of critical equipment. Critical equipment includes equipment such as machinery plant controls, electric plant controls and indicators, guidance systems that would require reprogramming should power be interrupted, or any equipment designated by the Commanding Officer to be necessary for safe ship operation or performance of the ship's mission. In these instances, the precautions outlined below shall be followed. ("Vital equipment" which is supplied power from multiple sources may not necessarily be considered "critical" for purposes of energized fuse replacement). Remove or replace fuses in an energized circuit as follows."</p>	Concur, change is incorporated.

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SUBPAC N4		300-2.5.5.6	<p>a. This section states, "The Commanding Officer will designate which critical equipment is necessary for safe ship's operation or performance of the ship's mission." This is a change from the previous revision of Ch. 300 which gave concrete examples of critical equipment and gave the Commanding Officer the ability to designate additional critical equipment. Requiring the Commanding Officer to designate every piece of critical equipment is administratively onerous.</p> <p>b. <b>Recommend</b> replacing "The Commanding Officer will designate which critical equipment is necessary for safe ship's operation or performance of the ship's mission" with "Critical equipment includes equipment such as machinery plant controls, electric plant controls and indicators, guidance systems that would require reprogramming should power be interrupted, or any equipment designated by the Commanding Officer to be necessary for safe ship operation or performance of the ship's mission."</p>	Intent of this comment is incorporated.
CLT Norman		300-2.5.5.6 a	Should be reworded to read "If permitted by the design of the circuits, remove all user equipment on the circuit by opening all user equipment switches and/or unplugging all portable cords prior to opening the fuse box cover." This is a less restrictive statement.	Do not concur, current wording preferred.
RPPY		300-2.5.5.6 b	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	concur/incorporated
Howard Snyder		300-2.5.5.6	<p>Update to 3rd sentence to read "Critical equipment includes equipment , such as machinery plant controls electric plant controls and indicators, guidance systems that would require reprogramming should power be interrupted, or any equipment designated by the Commanding Officer to be necessary for safe ship's ..."</p> <p>In 300-2.5.5.6, Change table reference to "Table 300-2-3"</p>	Wording is in paragraph stating to avoid shutdown of critical equipment. Intent already incorporated
Johnathan Gatliff		300-2.5.5.7	<p>Fuse Removal. My evaluation is that table 300-2-2 is sufficient; however, fuse removal &lt; 1000 Volts in critical panels requires two people. Does this mean that 4 people are required to hang tags on fuses? The Tag-out Users Manual section 1.6.5 requires independent hanging and verification. It states,"After tag posting is complete, a second person shall independently ensure that the correct component is tagged, and check (verify) proper component positioning and tag attachment. This checker shall not accompany the person(s) posting the tag." Visual inspection section 2.5.7 requires two people be present. Can the safety observer for fuse removal be the same safety observer for the 2nd checker, who must take visual inspection electrical safety, and still maintain the integrity of the tag-out? My concern is when we hang infrequent tag outs on out of the way fuse panels. If the safety observer is the same for both, there is a potential for them to steer the second checker down the wrong path. My intent isn't to hinder the ships force personnel when it comes to hanging tag outs, but simply to save them from themselves.</p>	No change required
CDR Gelker		300-2.5.5.7	Warning prior to section is missing something. Wording is awkward.	Change is incorporated.

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CLT Norman		300-2.5.5.7	First sentence should read "Lowering or raising instrument transformer primary fuses rated for greater than 1000 volts."	intent of comment incorporated in current change
RPPY		300-2.5.5.7	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Incorporated
RPPY		300-2.5.5.7	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated
Howard Snyder		300-2.5.5.7	Change table reference to "Table 300-2-3"	reference table is correctly munbered
Alan D. Finley		300-2.5.5.8 e	<b>Category:</b> Exceptions for Dead Front Fuse Holders <b>Comment:</b> Specifically states that for circuits rated greater than 10A that the fuse must not removed or replaced unless the circuit is not under load or drawing less than 10A. <b>Recommendations:</b> Explain whether or not it is the expectation that the rated load current be used to determine if de-energization is required.	Concur with recommended change.
John Lastowski		Table 300-2-2	Final review needs to include verified references in all tables.	Action complete, numerous changes incorporated
NNSY Code 2330		300-2.5.5.9	On page 300-54 in paragraph 300-2.5.5.9 this information is already contained in G/I-22 of the NAVSEA 0989-032-4000 Manual, so why have all this information repeated here instead just refer to G/I-22.	Concur, but non-nuclear Fleet does not have access to 4000 Manual. No change required.
John Lastowski		300-2.5.5.9	Renumber paragraph	Concur, change is incorporated.
John Lastowski		300-2.5.5.9 a	Delete "The latest requirements of " from second sentence.	Concur, change is incorporated.
John Lastowski		300-2.5.5.9 e 4	Update last sentence to read "Fuseholders with chips or cracks..."	Concur, change is incorporated.
PPEA		300-2.5.5.9 e 5	a. Comment: This section should be changed to read similarly to "If available, replace riveted electrical connected fuse holders and fuse carriers with soldered, MIL-PRF-19207 compliant devices". b. Rationale: The wording of this section is awkward and difficult to follow.	Do not concur, no change required.

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Dwayne Wood		300-2.5.6	<p>5. Section 300-2.5.6 Circuit Breaker Removal and Replacement is new. Appears to be where they incorporated most of the requirements of the arc-flash MOA.</p> <p>a. Paragraph 300-2.5.6.2.1 and the warning under 300-2.5.6.4 both require the entire switchboard/load center to be de-energized. I understand the requirement for load centers (450V breakers). For 4160V breakers, the MOA currently requires the breaker cubicle to be de-energized, not the entire switchboard. This is important because there is no reason to tag TG space heaters to remove a RCP breaker for example. Should be re-worded to match the current MOA.</p> <p>b. Paragraph 300-2.5.6.10 requires use of installed metering to verify major power sources are isolated prior to rack-in/rack-out of a 4160V breaker that has not had its switchboard verified de-energized by IVV check. The shop will not accept this and we specifically engineered the current arc-flash MOA to eliminate the use of installed metering. Besides the shop's objections, we cannot guarantee that the meter will not be removed for calibration or simply broken. This is also a category in new table 300-2-3 Requirements for Draw-out Type Circuit Breaker Rack-in/out</p>	Intent of comment incorporated. Metering is being used for initial visual indication. Action is for SEA 05 to ensure a workable solution for the entire Fleet.
John Lastowski		300-2.5.6.1	Add paragraph title Discussion:	Concur, change is incorporated.
Howard Snyder		300-2.5.6.1	Change table reference to "Table 300-2-4"	Do not concur, no change required.
John Lastowski		300-2.5.6.1 a	Move second sentence to lettered list item a. Delete first sentence. Update second sentence to read "Use <b>Table 300-2-3</b> to determine the appropriate requirements..."	Concur, change is incorporated.
RPPY		300-2.5.6.1 and 300-2.5.6.2.1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Concur/incorporated

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SUBLANT N4		300-2.5.6.10	<p>Recommend editing and clarification of NSTM 3002.5.6.10.</p> <p>From: "If a draw-out type circuit breaker is to be racked-in/out from a de-energized switchboard that has not been verified de-energized by IVV checks, Section 300-2.5.1, then use installed metering to verify that the major power sources have been isolated, by opening feeder circuit breakers, opening disconnect switches, switching ABTs, MBTs, etc. Prior to racking-in/out the circuit breaker ensure control circuits are de-energized. For the circuit breaker are removed. In these cases the switchboard does not have to be tagged out. Follow the requirements of Table 300-2-3 for electrical safety requirements; no arc flash PPE is required. Once the circuit breaker is in the racked-in/out position then switchboard may be restored."</p> <p>To: "If a draw-out type circuit breaker is to be racked-in/out from a de-energized switchboard that has not been verified de-energized by IVV checks, Section 300-2.5.1, then use installed metering to verify that the major power sources have been isolated, by opening feeder circuit breakers, opening disconnect switches, switching ABTs, MBTs, etc. Prior</p>	Do not concur, action related to comment #547.
SUBLANT N4		300-2.5.6.10	<p>to racking-in/out the circuit breaker ensure control circuits are de-energized for the circuit breaker being removed. In these cases the switchboard does not have to be tagged out. Follow the requirements of Table 300-2-3 for electrical safety requirements; no arc flash PPE is required. Once the circuit breaker is in the racked-in/out position then switchboard may be restored."</p> <p>This paragraph should have more detail to clarify what is meant by installed metering to ensure that meters showing the status of power sources feeding the switchboard in question are sufficient to meet this requirement.</p>	Change is incorporated.
Dennis Neitzel		300-2.5.6.10	Sentence ending "for the circuit breaker are removed." is incomplete and missing information.	Change is incorporated.
CLT Norman		300-2.5.6.10	Second sentence does not make sense.	Change is incorporated.

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Jeffery Watson		300-2.5.6.10	<p>If a draw-out type circuit breaker is to be racked-in/out from a de-energized switchboard that has not been verified de-energized by IVV checks, <b>Section 300-2.5.1</b>, then use installed metering to verify that the major power sources have been isolated, by opening feeder circuit breakers, opening disconnect switches, switching ABTs, MBTs, etc. Prior to racking-in/out the circuit breaker ensure control circuits are de-energized. for the circuit breaker are removed. In these cases the switchboard does not have to be tagged out. Follow the requirements of <b>Table 300-2-3</b> for electrical safety requirements; no arc flash PPE is required. Once the circuit breaker is in the racked-in/out position then switchboard may be restored.</p> <p>(It should state that metering should be verified operational immediately prior to use for verifying IVV. Also use of ships installed metering not authorized for verifying IVV at NNSY)</p>	No change required.
John Lastowski		300-2.5.6.10	Is it the intent not to have to obtain CO permission to rack in/out circuit breakers with the switchboard deenergized but not verified by IVV?	The intent was to not wear PPE. PPE requirements have been addressed in Table 300-2-3. No change required.
John Lastowski		300-2.5.6.10	Update paragraph to read "...IVV checks per Section 300-2.5.1, then use installed" and "switching ABTs, MBTs, etc. If the installed metering does not provide sufficient indication that the bus is de-energized based on circuit design, the location the meter is electrically connected to, or meter accuracy, then proceed via section 300-2.5.6.7 or 300-2.5.6.9. Prior to racking-in/out the circuit breaker ensure the applicable control circuits are de-energized for the circuit breaker being racked. Circuit breakers must be in the open position while being racked in or out of a switchboard. In these cases" and "Once the circuit breaker is in the racked-in/out position then the switchboard may be restored. If the circuit breaker is being racked-out to the test position for maintenance or testing, control power may be restored to the breaker once in the test position. Control power must be removed again prior to racking the breaker back into the connected position."	Change is incorporated.



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John Lastowski		300-2.5.6.10	<p>Add warnings following this paragraph to read:</p> <p><b><u>WARNING</u></b>  <b>A switchboard should be de-energized prior to racking-in/racking out a circuit breaker. If the Commanding Officer deems this not achievable, then follow the guidelines below.</b></p> <p><b><u>WARNING</u></b>  <b>Never rack-in or rack-out a shut circuit breaker due to the potential for arc flash or un-intended energization of equipment fed by the connected circuit.</b></p> <p><b><u>WARNING</u></b>  <b>The control circuit should be de-energized prior to racking-in/out a draw-out type circuit breaker. Control circuits should never be energized while moving a draw-out type circuit breaker in or out.</b></p>	Concur, change is incorporated.
SUBPAC N4		300-2.5.6.10	<p>a. After the first two sentences of this section, the paragraph stops making sense. A sentence fragment follows the second sentence, and the intent of the last three sentences can not be determined as written.</p> <p>b. <b>Recommend</b> editing section 300-2.5.6.10 to clarify its intent.</p>	Paragraph changed significantly.
John Lastowski		300-2.5.6.11	Update 2nd to last sentence to read "Commanding Officer, or designated representative permission is required."	Concur, change is incorporated.
Howard Snyder		300-2.5.6.11	Add paragraph heading "Energized evolution" and change table reference to Table 300-2-4.	No change required.
Gus Zografos		300-2.5.6.2	<p>I understand this to say that switchboards and load centers should be de-energized prior to racking out breakers. I agree with the energized check sheet and CO's permission needed prior to working on or in the vicinity of energized gear. And further agree that this decision (whether to treat as energized gear or tag out the entire switchboard) should be left up to the ships depending on configuration, threat scenario and redundancy needed. We need to give the that latitude not enforce the "one size fits all" scenario. I don't know what information you have received as far as daily routine maintenance in the fleet, but wanted you to hear it first hand from me. I'm a senior electrician who recently transferred from a seagoing asset who has first hand info on fleet relevancy. In both of these cases, personnel WILL do what is necessary to get the job done. that means where manning is minimal, maintenance will get done "after hours" in what we call "midnight maintenance" in the fleet. This is where Sailors will eventually go unsupervised and more injuries will occur. we'll only have ourselves to thank for that.</p>	Discussed. PPE requirements applied. No change required.

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Gus Zografos		300-2.5.6.2	Again, I want to repeat what I said earlier: the 300 should be "broad terms" unless specific incidents warrant tighter restrictions. I believe we are over-reacting to non-related maintenance with tougher rules due to recent fatalities in the fleet that were caused by other factors. The ships need to have the latitude to conduct work and impose tighter restrictions if THEY FEEL IT WARRANTS THAT. This can be done in their own electrical safety instructions.	Discussed. PPE requirements applied. No change required.
CLT Norman		300-2.5.6.2	Recommend deleting the last sentence of the paragraph. (i.e. "After the circuit breaker...") This sentence does not fit (apply) there, and is used later more appropriately.	Intent of this comment is incorporated.
PPEA		300-2.5.6.2	a. Comment: In the last sentence, add "and operating machinery of the circuit breaker" at the end. b. Rationale: The wording should also address the mechanical hazards.	Intent of comment incorporated in later modifications
John Lastowski		300-2.5.6.2	Move to lettered item c under 300-2.5.6.1. Update second sentence to read "A draw-out type circuit breaker uses a racking mechanism..."	Concur, change is incorporated.
John Lastowski		300-2.5.6.2	Add new paragraph to read: 300-2.5.6.2 General Requirements: a. Use <b>Table 300-2-3</b> to determine the appropriate requirements to use for circuit breaker removal and replacement. b. For removal or replacement of Fixed mounted circuit breakers, control circuits shall be de-energized, switchboards de-energized, and motor operators de-energized before removing or installing the circuit breaker. Otherwise, treat this as energized work per Section 300-XXXX. c. Prior to racking-in or racking-out a draw-out circuit breaker, its control circuits must be de-energized, the circuit breaker must be in the open position and the switchboard/load centers should be de-energized. If it is not practical to de-energize the switchboard then observe the requirements of <b>Table 300-2-3</b> . d. Before working on a draw-out circuit breaker it should be fully racked-out in accordance with the applicable technical manual. e. After the circuit breaker is fully racked-out a rubber blanket should be hung between the circuit breaker and the switchboard/load center, if it is feasible, to minimize the chance of tools or personnel from coming into contact with the energized bus work f. <del>Circuit breaker closing springs shall be discharged before performing work</del>	Concur, change is incorporated.
RPPY		300-2.5.6.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Concur, change is incorporated.
CLT Norman		300-2.5.6.2 and 300-2.5.6.3	300-2.5.6.2 and 300-2.5.6.3 are numbered out of order.	Concur, change is incorporated.
CLT Norman		300-2.5.6.2.1	300-2.5.6.2.1 first sentence is confusing. Recommend rewording it to read "...its control circuits should be de-energized; the breaker in the open position, and the switchboard/load center should be de-energized."	Concur, change is incorporated.

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EMCM Cox		300-2.5.6.2.1	Recommend rewriting: Prior to racking-in or racking-out a draw out type circuit breaker, it must be in the open position, its control circuits should be de-energized, and the switchboard/load centers should be de-energized.	Concur, change is incorporated.
Jeffery Watson		300-2.5.6.2.1	Prior to racking-in or racking-out a draw-out circuit breaker, its control circuits should be de-energized, in the open position and the switchboard/load centers should be de-energized. If it is not practical to de-energize the switchboard then observe the precautions of <b>Table 300-2-3</b> .  (Refers to de-energizing entire SWBD/Load Center verse associated breaker cubicle).	Noted. No change required.
John Lastowski		300-2.5.6.2.1	Move to lettered item d under 300-2.5.6.1. Update first sentence to read "...its control circuits must be de-energized, the circuit breaker must be in the open position..." and update the last sentence to read requirements not precautions.	Concur, change is incorporated.
John Lastowski		300-2.5.6.2.1	Delete warning after 300-2.5.6.2.1.	Concur, change is incorporated.
SUBLANT N4		300-2.5.6.2.1	Recommend changing NSTM 300-2.5.6.2.1 warning From: "The control circuit should be de-energized prior to racking-in/out a draw-out type circuit breaker. Control circuits should never be energized while moving a draw-out type circuit breaker into or out."  To: "The control circuit should be de-energized prior to racking-in/out a draw-out type circuit breaker. Control circuits should never be energized while moving a draw-out type circuit breaker into or out of a switchboard or enclosure."	Concur, change is incorporated.
Howard Snyder		300-2.5.6.2.1	Change table reference to "Table 300-2-4"	No change required.
Howard Snyder		300-2.5.6.2.1	Add NOTE after WARNING to preclude having to dress out in arc flash suit for relatively safe procedure. Note will read "NOTE By design, racking out and in a breaker to and from the "Test" Position is an exception to the rule and is not classified as "Work"."	Do not concur. SEA 05 action to discuss rack to test in this document.
SUBPAC N4		300-2.5.6.2.1	a. The second sentence in the warning following 300-2.5.6.2.1 contains a spelling error. b. <b>Recommend</b> editing the second sentence of the warning following 300-2.5.6.2.1 to read, "Control circuits should never be energized while moving a draw-out type circuit breaker in or out" (emphasis added).	Concur with stronger never energized wording
Dennis Neitzel		300-2.5.6.2.1 WARNING	Add additional warning "WARNING The circuit breaker shall be in the open position prior to racking-in/out a draw-out type circuit breaker. Never attempt to rack a draw-out type circuit breaker in or out while it is in the closed position."	intent previously addressed

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CESWG		300-2.5.6.2.2	Add the statement that racking out and in a breaker to and from the "test Position is not classified as "work" by design. <i>Review Action:</i> 12-1-10 Done	Do not concur.
John Lastowski		300-2.5.6.2.2	Move to lettered item e under 300-2.5.6.1. Update 3rd sentence to read "...control circuits can be either energized or de-energized."	concur. Incorporated.
RPPY		300-2.5.6.2.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	concur/incorporated
SUBPAC N4		300-2.5.6.2.2	a. This section refers readers to Appendix 300-I for appropriate electrical safety PPE to be worn within the electrical safety boundary if circuit breaker control power is energized. Appendix 300-I discusses different types of PPE, but does not specify PPE for situations like that discussed in section 300-2.5.6.2.2. b. <b>Recommend</b> adding specific information on required PPE for the situation described in section 300-2.5.6.2.2 to Appendix 300-I or directing the reader to a different section of reference (b) for appropriate PPE.	incorporated pointer to energized work section.
CLT Norman		300-2.5.6.2.3	replace the word "should" in the last sentence with the word "shall"	incorporated
PPEA		300-2.5.6.2.3	a. Comment: In the last sentence, add "and operating machinery of the circuit breaker" at the end. b. Rationale: The wording should also address the mechanical hazards.	intent captured
John Lastowski		300-2.5.6.2.3	Move to lettered item f under 300-2.5.6.1. Update 3rd sentence to read "...switchboard, if feasible."	incorporated.
John Lastowski		300-2.5.6.2.3	Add lettered item g under 300-2.5.6.1. "g. Spring operated circuit breakers use charged springs as the source of energy to close the main contacts vice an operating handle or an electric solenoid. The springs shall be discharged before performing work on the breaker unless the work requires the springs to be charged. Extreme care shall be exercised when working on a breaker with charged springs."	incorporated
Johnathan Gatliff		300-2.5.6.2.4	Circuit Breakers: when a circuit breaker is racked to the "Test" position, what is the appropriate covering? If control circuits must be re-energized for PMS while the breaker is racked to test, is this considered energized gear? Is it considered energized gear even if the PMS being done is not on the breaker itself? Does a boundary have to be erected in this case and does the exposed part of the breaker have to be covered?	incorporated.
John Lastowski		300-2.5.6.2.4	Move to lettered item h under 300-2.5.6.1. Update last sentence to read "...consideration may be needed to erect work boundaries..."	concur. Incorporated.
PPEA		300-2.5.6.3	a. Comment: This paragraph should be between 300-2.5.6.2.4 and 2.5.6.4. b. Rationale: Editorial error.	concur. Incorporated.
John Lastowski		300-2.5.6.3	Move to lettered item b under 300-2.5.6.1. If you do not move, numbering is out of sequence (300-2.5.6.3 appears before 300-2.5.6.2 in text)  What about pulling a submarine Condensate Pump Controller / breaker? This manual only discusses breakers with rackout capability...what about ACBs without racking mechanisms only locking bolts?	Format change incorporated. No change required for condensate pump controller. Treat as molded case breaker if can't rack the breaker.

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RPPY		300-2.5.6.3	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Incorporated.
Howard Snyder		300-2.5.6.3	Move paragraph to after 300-2.5.6.2.4. (Relocate this paragraph here because out of order.)	Incorporated. moved to lettered item "b" and renumbered
SUBPAC N4		300-2.5.6.3	a. This section is listed numerically out of order before section 300-2.5.6.2. b. <b>Recommend</b> moving the location of section 300-2.5.6.3 in the draft revision to after section 300-2.5.6.2.4.	Incorporated. Re-numbering and proper order addressed.
John Lastowski		300-2.5.6.4	Renumber to 300-2.4.5.6 and update title to "REQUIREMENTS FOR RACKING-IN/OUT DRAW-OUT TYPE CIRCUIT BREAKERS.	concur. Changed to 300-2.5.6.3. Incorporated.
John Lastowski		300-2.5.6.4	What about the need to discharge closing springs...nothing in here requires that as a step	Warning and Caution added
John Lastowski		300-2.5.6.4	It is unclear why a safety line is required for fuse replacement but not circuit breaker rackout. Include an Explanation as to the reasoning behind these requirements	No change required. Doesn't fall into definition of particularly hazardous.
John Lastowski		300-2.5.6.4	Move text from NOTE After 300-2.5.6.4 to just after the section title. - Add few sentences about what the risks are associated with these evolutions...arc flash and shock and why.	concur. Incorporated.
John Lastowski		300-2.5.6.4	Delete WARNING and replace with WARNING that reads " <b><u>WARNING</u></b> <b>Potential failure modes exist that would result in an untested circuit breaker closing spuriously upon switchboard energization. Appropriate personnel protection and distribution system conditions should be established to mitigate potential risks of this event."</b>	concur. Incorporated.
Alan D. Finley		300-2.5.6.4	<b>Category:</b> racking in/out circuit breakers. <b>Comment:</b> It is unclear why a safety line is required for fuse replacement but not circuit breaker rackout. <b>Recommendations:</b> Explain the reasoning behind these requirements.	No change required. See comment #598.
CLT Norman		300-2.5.6.4 through 300-2.5.6.11	300-2.5.6.4 through 300-2.5.6.11 are numbered wrong.	numbering corrected.
RPPY		300-2.5.6.4, 300-2.5.6.9 - 300-2.5.6.11	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated

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John Lastowski		300-2.5.6.9	<p>Update numbering. states no electrical safety or PPE requirements are required. This is contrary to Table 300-2-3 which requires use of insulated tools if the switchboard has been verified by IVV. Add warnings following this paragraph to read:</p> <p><b><u>WARNING</u></b> The allowance to use installed metering for isolation verification is only valid for circuit breaker racking evolutions and never for verification of isolation for electrical maintenance on the associated circuits.</p> <p><b><u>WARNING</u></b> Never rack-in or rack-out a shut circuit breaker due to the potential for arc flash or un-intended energization of equipment fed by the connected circuit.</p> <p><b><u>WARNING</u></b> The control circuit should be de-energized prior to racking-in/out a draw-out type circuit breaker. Control circuits should never be energized while moving a draw-out type circuit breaker in or out.</p>	Incororated
Howard Snyder		300-2.5.6.9 through 300-2.5.6.11	Renumber to 300-2.5.6.4.1, 300-2.5.6.4.2, and 300-2.5.4.3.	renumber and re-lettered
Gus Zografos		300-2.5.7	<p><b>Comment:</b> As a senior electrician, part of my daily routine is to inspect and note any discrepancies throughout the system. We also have programs involving senior personnel (Division in the spotlight, zone inspections) to identify material issues. The fleet knows that it takes an entire ship to run an effective safety program. the 4 electricians on a CG have no chance to do this by themselves. they are simply undermanned. When the deficiencies are identified, I then task my subordinate leaders with a work list to attack these issues in an effort to mitigate these problems. This is a steady strain process: a lack of fuse panel maintenance due to the myriad of ongoing inspections, decreased manning and OPTEMPO causes major problems down the road. As you know, improper fuse ratings, overloaded circuits and COTS fuses are a major problem in the fleet as noted by INSURV, ATG and Safety Center. What our new rules will effectively do, is limit the amount of inspections by senior personnel and inspection teams due to the "handcuffs" we are placing on them</p>	Incorporated

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Gus Zografos		300-2.5.7	(CO's permission, PPE, barriers, multiple personnel needed). Safety Center informs me that they have zero reported incidents due to visual inspection of fuse panels, which leads me to believe we are over-reacting to other non-related incidents (REAGAN, RENTZ) in enacting tougher rules on visual inspections of these panels. <b>Solution:</b> Leave the "barrier criteria" in the instruction (barrier can be rope or human bodies). This is important so no one will inadvertently bump in to the inspector. Permission should be left to the electrical officer or senior electrician. We could also mention to use ORM (a standard Navy catch phrase) to assess risks involved with an elevated sea state or foul weather. That's it. The rest can be left to the ships: 300 needs to be broad guidelines, not strict adherence. one size does not fit all (FFG manning is different than CVN). Ship's always have their electrical safety instruction to amplify if CO desires and the CVN has Nuke Notes to amplify as well.	incorporated
Johnathan Gatliff		300-2.5.7	Section 2.5.7 states that Commanding Officers permission must be obtained for performing visual inspections. For second checking of certain electrical tag-outs, a visual inspection must be performed by the second checker for tag-out verification. The one that comes to mind is tagging a system, "fuses removed" in a critical panel. The second checker must visually verify the fuses are removed prior to signing the tag and the TORS. Is CO's permission required to hang the tag out?	Incorporated.
CESWG		300-2.5.7	The 2nd sentence states; "...enclosure with no physical contact made with energized ..." At the end of this paragraph provides 6 precautions for doing visual inspections. Items listed as #1, #2, & #5 – if used will directly violate "no physical contact". A visual inspection is exactly that – no touchy feely – you don't take tools or equipment inside a boundary to make adjustments or tighten something. Items #3, #4, & #6 would apply. <i>Review Action:</i> 11-9-10 Done #1 and 2 are not true. Changed #5 to say, "Do not take tools or equipment inside the boundary".	intent incorporated by other changes. Flashlights, thermal imaging cameras may be required. No other changes required.
CDR Gelker		300-2.5.7	Paragraph H.1.3.1 repeats after H.1.3.3.a.	agree. Deleted second H.1.3.1
Gary Watson		300-2.5.7	The 2nd sentence states; "...enclosure with no physical contact made with energized ..." At the end of this paragraph provides 6 precautions for doing visual inspections. Items listed as #1, #2, & #5 – if used will directly violate "no physical contact". A visual inspection is exactly that – no touchy feely – you don't take tools or equipment inside a boundary to make adjustments or tighten something. Items #3, #4, & #6 would apply.	incorporated see comment #609.
EMCM Cox		300-2.5.7	Consideration should be given to amplifying visuals performed on components greater than 1000V. Is it the same as written or is arc flash protection required while the cabinet door is being opened?	requirements state can't do inspection on energized equipment greater than 1000V unless NAVSEA instruction authorizes. No change required.

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Dwayne Wood		300-2.5.7	<p>6. Paragraph 300-2.5.7 contains the requirements to perform a Visual Inspection of energized equipment.</p> <p>a. The new section requires COs permission to perform the visual inspection even though the procedure does not allow individuals performing the visual inspection to break the plane of the equipment.</p> <p>b. Seems excessive and should be removed. This would require 2340 and Ship's Force to get COs permission every week for hundreds of visual inspections during the tagout audit?</p>	incorporated.
Jeffery Watson		300-2.5.7	<p>Visual inspections. There are times when corrective or preventative maintenance requires visual inspections of non-damaged equipment. A visual inspection is defined as an inspection of energized equipment, circuitry or components within an enclosure with no physical contact made with energized components or circuit mounted inside the enclosure. The person performing the inspection shall not break the electrical safety plane. The electrical safety plane is the imaginary plane formed by the opening of an electrical enclosure, when the door is opened or cover removed. If electrical components are mounted on the door, then the plane includes the arc formed by the doors edge as it swings open. As a minimum, the sailor that is accessing the enclosure will take the following precautions for visual inspections:</p> <ol style="list-style-type: none"> <li>1. Remove all metal and loose clothing. Only required of the person opening the enclosure.</li> <li>2. Wear properly rated rubber gloves on both hands. Only required of the person opening the enclosure.</li> <li>3. Two persons shall be present.</li> </ol>	modified this guidance see comment #607 through 609.
Jeffery Watson		300-2.5.7	<p>4. Erect a barrier; this may be a person, a physical barrier, a rope, etc. depending on the location at a minimum of two foot from the electrical plane.</p> <p>5. Do not take uninsulated tools or equipment inside this boundary. Not applicable for thermal imaging cameras.</p> <p>6. Commanding Officer's permission is required.</p> <p>( Requires CO's permission and 2 persons very cumbersome for checking tags and verifying fuses removed.)</p>	incorporated.
John Lastowski		300-2.5.7	update title formatting, should be all caps.	incorporated.



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John Lastowski		300-2.5.7	<p>Move text from paragraph to 2 sub paragraphs and update to read as follows:            "300-2.5.7.1 Principles: There are times when...doors edge as it swings open."            300-2.5.7.2 Requirements: As a minimum, the sailor that is accessing the enclosure will take the following precautions for visual inspections:</p> <p><b>WARNING</b>  <b>Due to the additional risk of coming in contact with energized equipment, additional energized work controls should be invoked if the equipment is in a hard to access area, high sea states exist, etc.</b></p> <ol style="list-style-type: none"> <li>1. Visual inspections of energized equipment rated 1000V or above is not permitted unless approved by NAVSEA instruction.</li> <li>2. Commanding Officer's, or designated representative's, permission is required.</li> <li>3. Remove all metal and loose clothing.</li> <li>4. Wear properly rated rubber gloves on both hands.</li> <li>5. Two persons shall be present.</li> <li>6. Erect a barrier at least two feet from the electrical plane of the equipment. The barrier may be a person, physical barrier, rope, or any other means to prevent access to the immediate area around the equipment.etc.</li> <li>7. Do not take uninsulated tools or equipment inside this boundary.</li> </ol> <p>This requirement is not applicable for thermal imaging cameras.</p>	incorporated
John Lastowski		300-2.5.7	In the last sentence, specify that no precautions are required to perform a visual inspection on equipment that only contains voltages of <30V.	incorporated
John Lastowski		300-2.5.7	Make the bulleted list lettered vice numbered for consistency with other lists in the document.	incorporated.

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John Lastowski		300-2.5.7	<p>Add new section following 300-2.5.7 as follows: 300-2.5.8 300-2.5.8 Electrostatic Discharge (ESD)</p> <p><b>CAUTION</b> <b>When working with equipment that interfaces with ESD devices (including wiring), ensure that ESD controls are followed.</b></p> <p>Electrostatic Discharge (ESD) can damage electronic components such as integrated circuits (ICs), thin film resistors, and metal oxide semiconductors (MOS). Components that are particularly sensitive to ESD are packaged with ESD protective symbols such as those shown in Exhibit G/I 5-1 and are marked with ESD sensitivity symbols as shown in Exhibit G/I 5-2. Items packaged with the ESD protective symbol marking are packaged such that the item can be handled while in the package. ESD precautions must be taken prior to removing the part/assembly from the ESD protective package. ESD sensitivity symbols are typically placed directly on the part/assembly. Any item with an ESD sensitivity symbol should not be touched without first taking ESD precautions. In some cases, ESD sensitive parts are marked with one or more triangles to</p>	No change required. Guidance is in NSTM 400.
John Lastowski		300-2.5.7	<p>indicate their degree of sensitivity to ESD. Any part that is marked with one or more triangles should be handled as static sensitive.</p> <p>300-2.5.8.1 ESD Precautions The following guidelines are suggested for handling ESDS components.</p> <p>ESD Protected Areas</p> <p>An ESD protected area consists of tools, materials, and equipment required to control or minimize static voltage levels. Complementing the requirement for protected areas are the associated handling procedures to be used in the protected area. The protected area can be a permanent designated area or a temporary area located immediately adjacent to equipment regardless of its physical location.</p> <p>The ESD protected area concept requires careful consideration of two elements:</p>	No change required. Guidance is in NSTM 400.

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John Lastowski		300-2.5.7	<p>1. The necessity to maintain personnel safety at all times.</p> <p>2. Provision of a technically adequate level of protection for ESDS items handled.</p> <p>The objective of the protected area is to decrease, to the maximum extent possible, the potential static voltage levels below the lowest voltage susceptibility level of the parts and assemblies. Several general guidelines for the prevention of ESD are:</p> <ol style="list-style-type: none"> <li>1. Where practical, maintaining the relative humidity in the space at or near 50 percent is desirable to help reduce the buildup of static charge. However, humidity control is not a substitute for other ESD precautions.</li> <li>2. Technicians should electrically ground themselves before handling ESDS items to ensure that electrostatic charges are dissipated. Grounding can be accomplished by touching a metal frame connected to the ship's structure, but is preferably accomplished using an ESD wrist strap. Work surfaces should be electrically grounded using an ESD mat to ensure that the work surface does not contain any electrostatic charges.</li> </ol>	No change required. Guidance is in NSTM 400.
John Lastowski		300-2.5.7	<p>3. Components should be discharged prior to work.</p> <p>4. Utilize packaging and coatings which protect uninstalled ESD sensitive equipment.</p> <p>5. Items made of plastic, vinyl, or Styrofoam should be removed from the work area since these materials collect a static charge.</p> <p>6. ESD equipment (e.g. wrist straps, mats) should be cleaned and checked for damage prior to each use.</p> <p>ESD Training Periodic and recurrent ESD training should be provided to all personnel who perform or supervise any of the work associated with ESDS items.</p> <p>300-2.5.8.2 ESD Handling Guidelines The following guidelines should be used when handling and working on ESDS components:</p> <p><b>WARNING</b> When working on ESDS components in the vicinity of energized electrical components with 30 volts or greater exposed, the electrical safety guidelines of Reference 21 shall be followed in lieu of ESDS precautions.</p> <p>1. Antistatic wrist straps connected to ground should be worn when handling ESDS components, including during removal from packaging. Grounding can be accomplished by touching a metal frame connected to the ship's structure, but is preferably accomplished using an ESD wrist strap.</p>	No change required. Guidance is in NSTM 400.

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John Lastowski		300-2.5.7	<p>a. Antistatic wrist straps are for ESD control and do not reduce the risk of electric shock. The same electrical safety precautions apply with or without the use of wrist straps. Because a wrist strap does not protect the operator from electric shock, a wrist strap shall not be worn when working on ESDS components in the vicinity of energized electrical components with 30 volts or greater exposed.</p> <p>b. Wrist straps must have a current-limiting resistor (typically 1 megohm) molded into the ground cord head on the end that connects to the cuff.</p> <p>c. Wrist straps should be checked before every use as follows:</p> <ol style="list-style-type: none"> <li>1. Ensure the wrist strap, especially the cuff, is clean. Clean the strap if needed using a mild detergent.</li> <li>2. Inspect the wrist strap, especially the ground cord, for damage which may occur through normal wear and tear. If damaged, replace damaged components or use a replacement wrist strap.</li> </ol>	No change required. Guidance is in NSTM 400.
John Lastowski		300-2.5.7	<ol style="list-style-type: none"> <li>3. Test the wrist strap to ensure the entire path to ground, including the current limiting resistor, has not become an open or short circuit. If the test fails, replace any damaged components or use a replacement wrist strap.</li> <li>d. The wrist strap must be put on before touching any ESDS devices to ensure electrostatic charges due to static build-up are bled off from the operator.</li> <li>e. The wrist strap must be worn in direct contact with the bare skin and never over clothing.</li> <li>f. The wrist strap must fit snugly to provide antistatic protection.</li> <li>g. Use of rubber electrical insulated gloves is not equivalent to use of a wrist strap when handling ESDS sensitive components since there is no positive means of dissipating static charge on the glove and since damage to ESDS components may occur.</li> <li>2. ESDS components that have been removed from their static shield packaging should be placed on an ESDS protective work surface (example shown in Exhibit G/I 5-3) that is connected to the same ground as the wrist strap.</li> <li>a. When installing the ESDS component, the wrist strap should be connected to the receiving cabinet's ground (i.e. chassis ground).</li> </ol>	No change required.

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John Lastowski		300-2.5.7	<p>b. If more than one person is handling an ESDS component, each worker must be wearing an ESDS wrist strap connected to the same ground. An example of this case is when one technician is holding the ESDS component while another holds the ESDS protective packaging.</p> <p>3. Keep paper, nonconductive plastic, plastic foams and films, or cardboard off the grounded ESDS protective work surface.</p> <p>a. These materials generate and collect static charge due to frictional contact.</p> <p>b. Placing ESDS devices on top of any of these materials effectively insulates the ESDS device from ground and defeats the purpose of the static controlled conductive surface.</p> <p>4. Ensure electrical test equipment and temperature regulated soldering irons at ESDS work stations are properly grounded and only uninsulated metal hand tools are used when working on ESDS components. Plastic solder suckers and other plastic assembly aids should not be used on ESDS components. When using soldering irons around conductive ESDS work surfaces, be careful to prevent solder spills and heat from the soldering iron melting and damaging the ESDS work surface.</p>	No change required.
John Lastowski		300-2.5.7	<p>5. When not being worked on or when outside protected areas, ESDS parts and assemblies should be enclosed in ESD protective covering or packaging.</p> <p>a. When transporting ESDS components, place the components inside their original ESDS packaging, fold the opened end over on itself and tape it shut with conductive tape or the ESD label/sticker. Alternatively, use ziplock type ESDS packaging.</p> <p>b. Do not transport or store, even temporarily, the component in a folded ESDS mat.</p> <p>6. Do not allow any ungrounded personnel to contact an ESDS device or come in close proximity to it.</p> <p>7. While personnel may be attached to hard ground when working with ESDS components, it is preferable to use a current-limiting resistor (typically 1 megohm) between the person and the ground.</p> <p>8. ESD controls should still be followed when removing and handling suspected broken or damaged ESDS components. Failure to follow ESD controls may damage a card which had not actually failed or may cause additional damage which could mask the original fault.</p>	No change required.

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John Lastowski		300-2.5.7	<p>9. Streams from spray cans (e.g. Freon) should not be directed on ESDS circuit cards or parts. Vigorous rubbing or brushing of circuit boards or components should be avoided. Only cotton cloth or animal hair brushes should be used for cleaning or preventive maintenance.</p> <p>10. Protective static shield packaging should not be stapled. Plain poly packaging material and nonconductive adhesive tapes should not be used for packaging or covering of ESDS items.</p> <p>11. During inspection of received equipment, ensure the packaging of ESDS items is not open or damaged (e.g. torn, slit, stapled, punctured, or broken).</p> <p>12. Welding should be performed at least eight feet from open ESDS equipment or ESDS parts, circuit cards, or subassemblies that are removed from their protective packaging. Welding should be performed at least six inches from ESDS equipment that is not open, or at least six inches from ESDS parts, circuit cards or subassemblies that are in their ESDS packaging.</p> <p>13. Vacuum cleaning of ESDS equipment is not recommended.</p>	No change required.
RPPY		300-2.5.7	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	No change required.
Howard Snyder		300-2.5.7	In last sentence change 'sailor' to 'person'	concur. incorporated. ITT action: Perform read through to ensure all cases refer to person vice sailor throughout document. - ITT Action Complete 3/8/11
CNSL N43		300-2.5.7	Para 2.5.7 discusses Visual Inspections. Do we want an exception for the EMC or Electro to be able to spot check fuse panels for proper fuses armed with just a flashlight, as long as the plane is not broken? This is a culture on ships and should be discussed. It will likely have a negative effect on ship readiness if the spot checking by the chief is removed from the approved procedures.	incorporated.
Alan D. Finley		300-2.5.7	<p><b>Category:</b> Visual Inspections</p> <p><b>Comment:</b> It is unclear why rubber gloves are required to do a visual inspection.</p> <p><b>Recommendations:</b> If it is the expectation that the person performing the visual inspection may accidentally break the plan then a safety line should be required.</p>	incorporated.
Alan D. Finley		300-2.5.7	<p><b>Category:</b> Visual Inspections</p> <p><b>Comment:</b> It is unclear why there is a need for two people to do a visual inspection. Only one person is required (with supervisor's concurrence) for IVV checks where actual equipment entry occurs.</p> <p><b>Recommendations:</b> Allow the supervisor to determine how many persons are required for a visual inspection based on the situation and equipment similar to Note 2 of Table 300-2-1.</p>	incorporated.

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Alan D. Finley		300-2.5.7	<p><b>Category:</b> Visual Inspections</p> <p><b>Comment:</b> It is unclear whether all of the requirements for conducting a visual inspection apply regardless of the magnitude of voltage present in the piece of equipment.</p> <p><b>Recommendations:</b> Specify that no precautions are required to perform a visual inspection on equipment that only contains voltages of &lt;30V.</p>	incorporated.
EMCM (SW/AW) Jim Burke		300-2.5.7	<p>1. Visual Inspection of fuse panels (300-2.5.7): as a senior electrician, part of my daily routine is to inspect and note any discrepancies throughout the system. We also have programs involving senior personnel (Division in the spotlight, zone inspections) to identify material issues. The fleet knows that it takes an entire ship to run an effective safety program... the 4 electricians on a CG have no chance to do this by themselves... they are simply undermanned. When deficiencies are identified, I then task my subordinate leaders with a work list to attack these issues in an effort to mitigate these problems. This is a steady strain process: a lack of fuse panel maintenance due to the myriad of ongoing inspections, decreased manning and OPTEMPO causes major problems down the road. As you know, improper fuse ratings, overloaded circuits and COTS fuses are a major problem in the fleet as noted by INSURV, ATG and Safety Center. What our new rules will effectively do, is limit the amount of inspections by senior personnel and inspection teams due to the "handcuffs"</p>	incorporated.
EMCM (SW/AW) Jim Burke		300-2.5.7	<p>we are placing on them (CO's permission, PPE, barriers, multiple personnel needed). The only incidents I've ever seen related to visual inspection are somebody actually "touching a fuse" while pointing it out (this speaks to breaking the plane). INSURV is also currently having an issue with this as they are tasked to inspect 80% of all fuse panels. I see nothing wrong with opening a panel, not breaking the plane and conducting a visual inspection.</p> <p>SOLUTION: Leave the "barrier criteria" in the instruction (barrier can be rope or human bodies). This is important so no one will inadvertently bump in to the inspector. Permission should be left to the electrical officer or senior electrician. We could also mention to use ORM (a standard Navy catch phrase) to assess risks involved with an elevated sea state or foul weather. That's it. The rest can be left to the ships: 300 needs to be broad guidelines, not strict adherence... one size does not fit all (FFG manning is different than CVN). Ship's always have their electrical safety instruction to amplify if CO desires and the CVN has Nuke Notes to amplify as well.</p> <p>What is the INDUSTRY STANDARD for visual inspection????</p>	incorporated.

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John Lastowski		300-2.5.7 3	It is unclear why there is a need for two people to do a visual inspection. Only one person is required (with supervisor's concurrence) for IVV checks where actual equipment entry occurs. Allow the supervisor to determine how many persons are required for a visual inspection based on the situation and equipment similar to Note 2 of Table 300-2-1.	incorporated.
Howard Snyder		300-2.5.7 4	Change 'barrier' to 'boundary'	do not concur . No change required.
CLT Norman		300-2.5.7 6	Reword sentence to read "Commanding Officer's permission is required. This permission may be delegated in writing to the applicable Department Head." Allows Department Head to authorize visual inspections.	do not concur. Intent incorporated.
RPPY		300-2.5.7.1 and 300-2.5.7.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated.
Johnathan Gatliff		300-2.5.7.4	n paragraph 2.5.7.4 recommend changing "foot" to "feet". This paragraph states Commanding Officers permission is necessary to perform a visual inspection. It also allows for taking the thermal imaging camera inside the boundaries. It does not allow the Commanding Officer to delegate his permissional authority nor does it have a disclaimer for procedures issued by a higher technical authority, i.e. MRC card such as that which would be used for thermal imaging. It would add numerous man hours on to the MRC for thermal imaging if CO's permission was needed to be obtained each time prior to performing the PMS. I understand the CO is ultimately responsible for electrical safety; however, with the amount of thermal imaging that is performed on a platform as large as a Carrier, not having the option of delegating this authority to department heads or duty officers poses a hindrance to maintenance.	incorporated.
John Lastowski		300-2.6	Delete note before Section 300-2.6	Change is incorporated.
John Lastowski		300-2.6	Change "Precautions" to "REQUIREMENTS" in section title.	Change is incorporated.
John Lastowski		300-2.6	Add warning after section title <b><u>"WARNING</u></b> <b>Due to the additional risk of coming in contact with energized equipment, additional energized work controls should be invoked if the equipment is in a hard to access area, high sea states exist, etc. "</b>	Change is incorporated.
John Lastowski		300-2.6.1	The requirements for work on damaged equipment are inadequate. This section should identify the additional checks that should be performed beyond those listed in 300-2.3 and 300-2.4; specifically checking the outside of the enclosure for voltages.	Change is incorporated.



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John Lastowski		300-2.6.1	Update to read "...usually caused by fire, steam leak, blunt force, collision, battle damage, etc.), observe the general electrical safety requirements of <b>Section 300-2.3</b> , and the requirements for maintenance of energized circuits of <b>Section 300-2.4</b> , until it is verified that all portions of the circuit, including electrical enclosures, are isolated and de-energized."	Change is incorporated.
Howard Snyder		300-2.6.1	In WARNING change 'barriers' to 'boundary'	No change required.
CNSL N43		300-2.6.1	Para 300.2.6.1 discusses in effect deranged gear but does not call it such. I know the intent was to remove the word 'deranged' from the ch 300 but it is used elsewhere. Suggest this section covers the term or requirement of "deranged" gear.	Note added.
Alan D. Finley		300-2.6.1	<b>Category:</b> Damaged Electrical Equipment <b>Comment:</b> The requirements for work on damaged equipment are inadequate. <b>Recommendations:</b> This section should identify the additional checks that should be performed beyond those listed in 300-2.3 and 300-2.4; specifically checking the outside of the enclosure for voltages.	Change is incorporated.
Dennis Neitzel		300-2.6.2	In the last sentence delete 'does'.	Change is incorporated.
Johnathan Gatliff		300-2.6.2	Paragraph 2.6.2 states: "then the equipment should does not need to be treated as damaged gear." Recommend deleting the word "should", and making the statement read: "then the equipment does not need to be treated as damaged gear."	Do not concur. Deleted "does".
CESWG		300-2.6.2	Line 4: Grammar: ...improper test leads, etc., then the equipment does not need... (delete should). <i>Review Action:</i> 11-9-10 Done	Do not concur. Deleted "does".
CLT Norman		300-2.6.2	fourth sentence has an extra "should" in it that should be deleted (...the equipment should does not...	Do not concur. Deleted "does".
CLT Norman		300-2.6.2	Appendix 1 step 300-2.5.3.3 contains the requirement to have PPE tested at a qualified lab periodically. N9 west recommends that logistical guidance be provided to ships when having the equipment tested.	Do not concur. Lab testing is not required and periodic inspection will be covered by PMS.
PPEA		300-2.6.2	a. Comment: In the third sentence, change "should does" to "does". b. Rationale: Editorial correction.	Concur. Change is incorporated with modifications.
John Lastowski		300-2.6.2	Delete should from last sentence where it currently reads "...then the equipment should does not need to be treated..."	Concur. Change is incorporated with modifications.
RPPY		300-2.6.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.

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SUBLANT N4		300-2.6.2	From: "Equipment that causes a shock. If an electrical component has caused a shock, that component should be de-energized immediately. If it is suspected that shock was caused by equipment malfunction, then the equipment shall be considered as damaged and handled per Section 300-2.6.1 until repaired. If the reason for the shock is apparent; personnel error, improper test leads, etc, then the equipment should does not need to be treated as damaged gear, Section 300-2.6.1, but instead should be evaluated by qualified personnel prior to restoring for unrestricted use." Treated as damaged gear, Section 300-2.6.1, but instead should be evaluated by qualified personnel prior to restoring for unrestricted use."	Concur. Change is incorporated.
SUBLANT N4		300-2.6.2	To: "Equipment that causes a shock. If an electrical component has caused a shock, that component should be de-energized immediately. If it is suspected that shock was caused by equipment malfunction, then the equipment shall be considered as damaged and handled per Section 300-2.6.1 until repaired. If the reason for the shock is apparent; personnel error, improper test leads, etc, then the equipment should does not need to be treated as damaged gear, Section 300-2.6.1, but instead should be evaluated by qualified personnel prior to restoring for unrestricted use."	Concur. Change is incorporated with modifications.
Howard Snyder		300-2.6.2	Update last sentence to read "...then the equipment does not need..."	Concur. Change is incorporated with modifications.
SUBPAC N4		300-2.6.2	a. The last sentence of this article is confusing. It states in part, "If the reason for the shock is apparent; personnel error, improper test leads, etc (sic), then the equipment should does not need to be treated..." (Emphasis added.) b. <b>Recommend</b> deleting the word "should" from the sentence quoted to clarify the section's intent.	Concur. Change is incorporated with modifications.
Dennis Neitzel		300-2.6.3	Add warning after paragraph. "WARNING Never try to force inoperative or malfunctioning equipment, particularly draw-out type circuit breakers, by using pry bars or other tools. They can fail violently if forced."	No change required, similar changes cover this section.
PPEA		300-2.6.3	a. Comment: The expression "are grounded" should be changed to "shorted". b. Rationale: All metallic enclosures are intentionally grounded, in accordance with MIL-STD-1310.	Change is incorporated.

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John Lastowski		300-2.6.3	I don't like this wording. Need to specify that indications of smoke, fire, grounds, cycling currents, or hardware failure require troubleshooting and should be approached with electrical safety precautions... Update to read "Inoperative or Malfunctioning Equipment. Inoperative or malfunctioning equipment is equipment or circuits that are not operating properly, (abnormal noise, abnormal indication or response, etc), but has not suffered a casualty. This equipment does not need to be considered as damaged equipment for repair/operations, but should undergo troubleshooting and repair as soon as operational practical. If multiple indications point to potential electrical equipment damage, such as ground indications with abnormal current or voltage indications or smoke and/or acrid odor, then the equipment should be treated as damaged per Section 300-2.6.1."	Change is incorporated.
John Lastowski		300-2.6.4	Add new paragraph and renumber subsequent paragraphs in section. 300-2.6.4 Mechanical circuit breakers that use springs for closing the main contacts versus a handle or electric solenoid can fail such that the springs are in the charged state. Precautions in the applicable technical manual must be followed to ensure the springs do not unexpectedly discharge during subsequent troubleshooting and handling. Such unexpected discharge could cause injury to personnel working on the breaker or could unexpectedly energize a load if the breaker is still in the switchboard.	Change is incorporated.
John Lastowski		300-2.6.4	Should include actions for suspected internal wetting.	Change is incorporated.
John Lastowski		300-2.6.4	Renumber as 300-2.6.5 and update 1st sentence to read "and must be dried off" and update the last sentence to read "grounded equipment before and after drying the equipment."	Change is incorporated.
RPPY		300-2.6.4	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
John Lastowski		300-2.7	Recommend deleting 300-2.7.7.3, 2.7.7.5, 2.7.7.6 and 2.7.7.7. The requirements are included in the 2.7.3 section. 2.7.7.2.b refers you back to the 2.7.3 requirements. Also, 300-2.7.8 states personal equipment needs to be in compliance with all of section 300-2.7 anyway.	Change is incorporated.
PPEA		300-2.7.1	a. Comment: In the first sentence, change "is devices" to "are devices". b. Rationale: Editorial correction.	Change is incorporated.
PPEA		300-2.7.1	a. Comment: The sentence beginning "Portable electrical tools" should be sub-paragraph (a) and the subsequent sub-paragraphs should be re-numbered. b. Rationale: Editorial correction.	Change is incorporated.

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John Lastowski		300-2.7.1	This paragraph uses the term, "... shipboard isolated receptacles ..." without definition. Suggest a parenthetical, "... isolated (as discussed in 300-2.7.2 below) ..." In addition, 300-2.7.2 points to 320-1.4, which does not really talk about isolated circuits at all. Finally, 300-2.7.2 implies that all shipboard receptacles are on isolated circuits – are we really sure that is true?	Change is incorporated.
John Lastowski		300-2.7.1	update first sentence to read "...electrical equipment are devices..."	Change is incorporated.
John Lastowski		300-2.7.1 a	Stationary not stationery	Change is incorporated.
Dennis Neitzel		300-2.7.1.1	The requirement for rubber insulated gloves should not apply to battery operated tools/devices since they do not present a shock hazard." to end of 3rd sentence. Delete "including the use of battery operated tool/devices" from 3rd sentence.	this comment does not apply to this section which covers receptacle powered equipment. No change required.
John Lastowski		300-2.7.1.1	This does not belong under section 2.7.1, definitions...new sub-paragraph.	No change required.
John Lastowski		300-2.7.1.1 c	Consider referring to the decibel requirement for hearing/double hearing protection.	Covered under separate instruction. No change required.
John Lastowski		300-2.7.1.1 g	Recommend re-wording this to say: "Do not join extension cords longer than 25 feet together, and never join more than two. Single length extension cords up to 100 feet long are permissible."	incorporated.
Mark Klung		300-2.7.2	<i>Current Wording:</i> These circuits are individually isolated from the main power distribution system by transformers <i>Recommended Change:</i> The distribution system or individual circuits have their own single phase transformers to isolate them from the power distribution system <i>Justification:</i> "circuits are individually isolated" implies that all circuits have their own isolation transformer, in addition single phase should be put in to segregate bank of (3) transformers feeding a panel which could feed a receptacle circuit.	intent incorporated,
CESWG		300-2.7.2	The 3rd sentence contradicts (< 10mA) what Underwriters Laboratory's tests for Class A GFCI'S which is the standard that has been set for non-lethal shocks. Where did NAVSEA get this level of current and has it been validated as non-lethal?	clarified.
Gary Watson		300-2.7.2	The 3rd sentence contradicts (< 10mA) what Underwriters Laboratory's tests for Class A GFCI'S which is the standard that has been set for non-lethal shocks. Where did NAVSEA get this level of current and has it been validated as non-lethal?	see comment #680

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John Lastowski		300-2.7.2	This design limits ground leakage currents to less than 10 mA, which will produce a nonlethal shock to personnel and should enable them to let go." Paragraph 300 2.1.2.4 states that at 10 mA, a person may be unable to let go. The two paragraphs seem to contradict each other.	incorporated.
John Lastowski		300-2.7.2	Delete offsetting commas around "and equipment design improvements" in the 2nd to last sentence.	incorporated.
RPPY		300-2.7.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated.
Howard Snyder		300-2.7.2.1.1	Add paragraph heading "Missing grounded terminal."	do not concur, do not add title, consistent with rest of book. No change required.
Howard Snyder		300-2.7.3	Update title to read "PORTABLE ELECTRICAL EQUIPMENT TYPES."	do not concur, do not add title, consistent with rest of book. Discuss both portable and mobile equipment in section. No change required.
John Lastowski		300-2.7.3.1	In the 1st sentence, change brackets around the examples to parentheses.	Incorporated.
John Lastowski		300-2.7.3.2	This sentence appears to require an internal check of the ground wire connection to the metal housing of power tools with metal enclosures. This would require partial disassembly of the tool. This section should be more clear if partial disassembly is what is intended.	It is a MIP 3000 generic tool issue test with tool tested. No change required.
John Lastowski		300-2.7.3.2	Delete quotes around "The use of these grounded-type...plugs and receptacles."	incorporated.
SUBPAC N4		300-2.7.3.2.1	a. The second and third sentences of this article are unnecessarily surrounded by quotation marks. b. <b>Recommend</b> deleting the quotation marks around the second and third sentences of section 300-2.7.3.2.1.	incorporated.
Mark Klung		300-2.7.3.4	<i>Current Wording:</i> Note: For tools/devices with solid state components rated less than 500 volts, use multimeter (SCAT 4245) only <i>Recommended Change:</i> Note: For tools/devices with solid state components rated less than 500 volts, use multimeter (SCAT 4245) or equivalent <i>Justification:</i> Use of equivalent wording will allow the use of another multimeter in case this one gets obsolete or upgraded	incorporated.
Dennis Neitzel		300-2.7.3.4 and global	Change to read Megohmmeter (Meggers®)	no change required.
John Lastowski		300-2.7.3.4 b	Change 'any' to 'all' and 'conductor' to 'conductors'	incorporated
John Lastowski		300-2.7.3.4.2	Change "Three-prong plugs" to "three-prong plugs"	incorporated
Howard Snyder		300-2.7.3.4.2	"three-prong-plugs" not "Three-prong plugs"	incorporated

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John Lastowski		300-2.7.3.5	<p>Change 'stationery' to 'stationary'</p> <p>Move "Personal computers and peripherals may be connected to ship's isolated receptacle circuits." to after 2nd sentence.</p>	incorporated
SUBLANT N4		300-2.7.3.5	<p>Recommend further clarifying NSTM 300-2.7.3.5.</p> <p>Currently: "Mobile Electrical Equipment. Mobile Electrical Equipment is defined as a unit which is typically not hard-wired, can be moved, and normally is stationary while operating. Examples include: copiers, computers, fans, toasters, welding machines, bench grinders, juice dispensers, ships entertainment equipment, TVs, vending machines, refrigerators, automated teller machines, coffee makers, etc. Any single-phase 115-volt mobile equipment which is permanently located and is energized more than 50 percent of the time (such as copiers, soda machines and automatic teller machines) shall not be connected to the ship's existing isolated receptacle circuits. Personal computers and peripherals may be connected to ship's isolated receptacle circuits. Connecting this equipment to the ship's existing isolated receptacle circuits may overload the circuits, resulting in fire hazards. Each piece of equipment of this type should be connected to a separate single-phase circuit through an isolation transformer supplied by the lighting distribution system."</p> <p>Clarify: The last three sentences contradict the first part of the paragraph.</p>	clarified. Intent incorporated.
SUBPAC N4		300-2.7.3.5	<p>a. This section contains the following consecutive sentences. "Personal computers and peripherals may be connected to ship's isolated receptacle circuits. Connecting this equipment to the ship's existing isolated receptacle circuits may overload the circuits, resulting in fire hazards. Each piece of equipment of this type should be connected to a separate single-phase circuit through an isolation transformer supplied by the lighting distribution system." The final two sentences directly contradict the first sentence.</p> <p>b. <b>Recommend</b> clarifying to which type of equipment the two sentences quoted above refer.</p>	clarified. Intent incorporated.

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EMCM (SW/AW) Jim Burke		300-2.7.3.5	<p>I think the following should be reviewed before finalizing... For instance, how many surge suppressors are located in your logroom and how many isolated receptacle circuits are in your logroom? From what I'm seeing In the fleet, ALL ships are violating letter (a) below: 1 surge suppressor per isolated receptacle circuit?? I understand the wire size versus full load amps argument, but don't the surge suppressors that are NAVSEA approved have overcurrent and fault protection suitable for the marine environment? (see below). In today's computer environment, Electrical Officers are frustrated with the below section.</p> <p>300-2.7.3.5 a. Where a multi-outlet powerline strip is required, only one is allowed on one isolated receptacle circuit. b. The equipment load must not exceed 13 amperes. When numerous pieces of equipment (other than personal computer work stations) are connected to one receptacle, the equipment load is equal to the summation of name plate full load ampere ratings of each equipment at 115 volts. When an equipment has various speeds or power settings with</p>	05Z to investigate removal of section 300-2.7.3.5.a.
EMCM (SW/AW) Jim Burke		300-2.7.3.5	<p>different current requirements for each setting, the highest current rating shall be used.</p> <p>NOTE Computer / Printer equipment name plate full load amperage ratings do not reflect steady-state operation amperes of equipment, accurate amperage ratings are required to determine power consumption.</p> <p>c. The total receptacles per circuit (including the receptacle supplying the mobile equipment and those unused on multi-outlet powerline strips) must be limited to: <math>1 + [(13 - \text{mobile equipment load in amperes})/0.87]</math>, rounded to the nearest lower whole number. All other receptacles must be removed or disabled.</p> <p>d. Since most commercial personal computers and peripherals, copiers, etc., generally do not disconnect both power lines when the power switch is in the "off" position, these mobile equipments should be unplugged from the receptacle after they are switched off in order to have them truly de-energized, unless it can be ascertained the on/off switch disconnects both power lines.</p> <p>Thoughts?</p>	incorporated.
John Lastowski		300-2.7.3.5 a	Change to read "only one is allowed on each isolated receptacle circuit."	incorporated

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Jim Kaufman		300-2.7.3.5 c	does this meet the current GSO requirement for receptacles? What defines IT-21 equipment?	deleted. References to specific ShipAlt not required.
John Lastowski		300-2.7.3.5 c	Need to define what is meant by IT21 equipment	deleted. References to specific ShipAlt not required.
John Lastowski		300-2.7.3.5 c	1+ [(13 - mobile equipment load in amperes)/0.871] - Explain the basis for this number/term.	incorporated change back to 0.87
SUBPAC N4		300-2.7.3.5 e	a. This section states, "These items are now described by a commercial item description, CID A-A-50622 which includes reference to UL Standard 1449" but does not indicate what specific items the words "these items" refer to. b. <b>Recommend</b> specifying which items 300-2.7.3.5.e refers to.	incorporated.
John Lastowski		300-2.7.3.6	Change "it has" to "they have"	incorporated.
John Lastowski		300-2.7.3.6.1	Add ", see Section 300-2.7.5.2.1." to end of last sentence.	incorporated.
John Lastowski		300-2.7.3.6.2	300-2.7.3.6.2 and 2.7.7.3 contradict each other.	incorporated.
John Lastowski		300-2.7.3.6.2	change "Two" to "Three" to maintain consistency with paragraph 300-2.7.7.3 which is basically a repeat of this paragraph.	incorporated.
RPPY		300-2.7.3.6.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated.
John Lastowski		300-2.7.3.6.4	300-2.7.3.6.4 needs to be included and listed in 2.7.7.2.b.  Add alarm clocks to list of equipment in first sentence.	incorporated.
RPPY		300-2.7.3.6.4	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated.
John Lastowski		300-2.7.3.6.7	300-2.7.7.8 wording is much better than 2.7.3.6.7. Recommend rewording 2.7.3.6.7 with the 2.7.7.8 wording and delete 2.7.7.8.	incorporated.
RPPY		300-2.7.4.1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated.
John Lastowski		300-2.7.4.1.1	Paragraph 2.7.4.1 was skipped. Please correct numbering.	incorporated.
Howard Snyder		300-2.7.4.1.1	Renumber to 300-2.7.4.1 and add paragraph heading "Replacement cable type."	partially incorporated. No section heading required.
John Lastowski		300-2.7.4.1.2	I think this should be MIL-DTL-2726...please verify and change as needed.	Incorporated
Howard Snyder		300-2.7.4.1.2	Renumber to 300-2.7.4.2 and add paragraph heading "Three phase 115V equipment. Delete electrical in first sentence.	partially incorporated. No section heading required.
Howard Snyder		300-2.7.4.1.3	Renumber to 300-2.7.4.3 and add paragraph heading "Replacement cable description."	partially incorporated. No section heading required.
Howard Snyder		300-2.7.4.2	Renumber to 300-2.7.4.4.	Incorporated



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John Lastowski		300-2.7.4.2 a	Insert WARNING between a and b. " <b><u>WARNING</u></b> <b>Extreme care must be exercised to see that ground connections are made correctly. If the ground conductor which is connected to the metallic equipment casing is inadvertently connected to a line contact of the plug, a dangerous potential will be placed on the equipment casing. This may cause a fatal shock to the person handling the equipment when it is plugged into receptacle, since line voltage will be on the exposed parts of the, metal-cased equipment."</b>	Incorporated
John Lastowski		300-2.7.4.2 b	Delete "Extreme care must be exercised to see that the ground connection is made correctly. If the ground conductor which is connected to the metallic equipment casing is inadvertently connected to a line contact of the plug, a dangerous potential will be placed on the equipment casing. This may cause a fatal shock to the person handling the equipment when it is plugged into receptacle, since line voltage will be on the exposed parts of the, metal-cased equipment. To guard against this danger,"	Incorporated
RPPY		300-2.7.4.2 b	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Incorporated
Howard Snyder		300-2.7.4.3	Renumber to 300-2.7.4.5.	Incorporated
CNSL N43		300-2.7.4.3	Para 300.2.7.4.3 discusses two prong plugged equipment then gives an example of Xmas decorations. Bad example, since it doesn't discuss how many you can plug in or if it is UL listed? (EMC noted – I couldn't find.)	Incorporated
Howard Snyder		300-2.7.4.4	Renumber to 300-2.7.4.6.	Incorporated
John Lastowski		300-2.7.4.4.1	Update 4th sentence to read "Authorized for inclusion in the ship's allowance are single and three outlet 25-foot extension cords for use with tools and equipment."	Incorporated
Howard Snyder		300-2.7.4.4.1	Renumber to 300-2.7.4.7 and add paragraph heading "Method of connecting tools and devices to extension cords."	renumbered to 300-2.7.4.6.1. No heading required.
John Lastowski		300-2.7.5.1 d	Change 'any' to 'all'	Incorporated
John Lastowski		300-2.7.5.2	Capitalize "Electrical" at beginnin of 1st sentence.	Incorporated
RPPY		300-2.7.5.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Incorporated
John Lastowski		300-2.7.6.1	Delete "(new installation)" from paragraph title.	Incorporated
John Lastowski		300-2.7.6.1	Add "i. Where the receptacle contains more than one outlet, the test procedures shall be repeated for each outlet."	Incorporated
RPPY		300-2.7.6.1	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Incorporated
CNSL N43		300-2.7.6.1	Para 300.2.7.6.1 discusses testing receptacle connections, but before sub-paragraph "a" it should include PMS as a reason to also test receptacles, as there is associated PMS.	Incorporated

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Howard Snyder		300-2.7.7.1	Add paragraph heading "Personally owned equipment management."	No change required.
Howard Snyder		300-2.7.7.2	Add paragraph heading "Personally owned equipment acceptance criteria."	No change required.
Mark Klung		300-2.7.7.2	<i>Current Wording:</i> Note: For tools/devices with solid stat components rated less than 500 volts, use multimeter (SCAT 4245) only <i>Recommended Change:</i> Note: For tools/devices with solid state components rated less than 500 volts, use multimeter (SCAT 4245) or equivalent <i>Justification:</i> Use of equivalent wording will allow the use of another multimeter in case this one gets obsolete or upgraded	Incorporated
Howard Snyder		300-2.7.7.3	Add paragraph heading "Tagging requirements."	No change required.
Dennis Neitzel		300-2.7.7.4	Paragraph is missing information.	corrected
CDR Gelker		300-2.7.7.4	Missing ending of section.	corrected
John Lastowski		300-2.7.7.4	Last sentence is incomplete...what is the intended action?	corrected
RPPY		300-2.7.7.4	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	corrected
Howard Snyder		300-2.7.7.4	Add paragraph heading "Damaged Equipment." and update last sentence to read "...the equipment should not be used until repaired and re-inspected."	intent incorporated.
RPPY		300-2.7.7.5	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	intent incorporated.
Howard Snyder		300-2.7.7.5	Add paragraph heading "Personal low wattage equipment provisional requirements"	No change required.
Howard Snyder		300-2.7.7.6	Add paragraph heading "Personal high wattage equipment provisional requirements."	No change required.
Howard Snyder		300-2.7.7.7	Add paragraph heading "Insulation requirements."	No change required.
Howard Snyder		300-2.7.7.8	Add paragraph heading "Prohibitions from onboard use of personal equipment."	No change required.
Dennis Neitzel		300-2.7.8	2nd to last sentence add a comma after "If you have any doubt to its readiness for use"	incorporated.
John Lastowski		300-2.8.13	"EQUIPMENT" not "EQUIPMENTS"	incorporated.
Mark Klung		300-2.8.14	<i>Current Wording:</i> Amperage for current portable is 20 amps <i>Justification:</i> This statement is unclear.	deleted first paragraph 300-2.8.14 due to editorial correction.

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Mark Klung		300-2.8.14	<i>Current Wording:</i> Amperage will vary depending on portable equipment listed on most current AMAL (Authorized Medical Allowance list), <i>Justification:</i> This statement is duplicated in the paragraph below, there are (2) 300-2.8.14 sections, eliminate the first paragraph and reword the first sentence to be more clearer and incorporate in the second paragraph	deleted first paragraph 300-2.8.14 due to editorial correction.
John Lastowski		300-2.8.14	First sentence is incomplete, please correct.	deleted first paragraph 300-2.8.14 due to editorial correction.
John Lastowski		300-2.8.14	This paragraph number is used twice. Please correct.	deleted first paragraph 300-2.8.14 due to editorial correction.
John Lastowski		300-2.8.14	Change paragraph title to "Receptacles for portable X-ray machines."	incorporated
RPPY		300-2.8.14	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated
RPPY		300-2.8.14	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated
Howard Snyder		300-2.8.14	Two paragraphs have this number. Update second paragraph number to 300-2.8.15.	incorporated
John Lastowski		300-2.8.7	In 2nd to last sentence 'results' not 'result'	incorporated
RPPY		300-2.8.7	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated
John Lastowski		300-2.8.8	In 2nd sentence update to read "...four but no less than one..."  Of what? What do you need four of?	sentence unnecessary. Deleted.
RPPY		300-2.8.8	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	sentence unnecessary. Deleted.
		300-2.9	This info is Contrary to current American Heart Association Cardio Pulmonary Resuscitation techniques. Unless NAVSEA wishes to update this section whenever medical updates occur, there is little value to this section and is actually misleading. CPR certifications will not be given based on this amterial. As such, remove this and reference BUMED documents.	Concur. Deleting section 2.9 material and just keep reference to Red Cross/AHA.
Alan D. Finley		300-2.9	<b>Category:</b> Resuscitation from Electric Shock <b>Comment:</b> Contrary to current American Heart Association Cardio Pulmonary Resuscitation techniques. <b>Recommendations:</b> Remove this and reference BUMED documents.	Concur. Deleting section 2.9 material and just keep reference to Red Cross/AHA.
NAVSHIPYD PTSMH		300-2.9	Although the information and proper training is important, consideration should be given to replacing section 300-2.9 with guidance on where to find the appropriate up to date first aid information. First aid, and particularly CPR guidance, from the American Red Cross changes on a fairly regular basis and this manual is likely to be in conflict due to infrequent updates.	Incorporated.
John Lastowski		300-2.9.4 c	Change second to last sentence to read "...is outweighed by the need for immediate life-saving intervention."	incorporated

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Howard Snyder		300-2.9.4.1	Update paragraph heading to read "Cardiac arrest (loss of heartbeat)."	No change required.
Jim Kaufman		300-2.9.4.2	Basic CPR, will the new red cross CPR guidelines be listed?	Concur. Deleting section 2.9 material and just keep reference to Red Cross/AHA.
John Lastowski		300-2.9.4.2	First figure reference should be for Figure 300-2-9-1.	incorporated
RPPY		300-2.9.4.2	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated
John Lastowski		300-2.9.4.2 d 4	Conflicts with the guidance in 300-2.9.4.4 and Table 300-2-9-2, which states that chest compressions should be given at a rate of 100 compressions per minute when one or two rescuers are administering CPR.	incorporated
RPPY		300-2.9.4.2 d 4	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	incorporated
CDR Gelker		300-2.9.4.2 d 5	Discusses car accident victims. This is not applicable to the document and is confusing. Recommend deleting this comment.	incorporated
John Lastowski		300-2.9.4.2 d 5	This guidance belongs just before or just after paragraph 300-2.9.4.2 a. (1) (open the victim's airway). It definitely does not belong under 300-2.9.4.2 d. (chest compression).	incorporated
John Lastowski		300-2.9.4.3	Should guidance in the case of a neck injury be added to the CPR summary?	not applicable. Section deleted.
John Lastowski		300-2.9.4.3 h	for' not 'or'	not applicable. Section deleted.
John Lastowski		300-2.9.4.3 h 3	This summary does not include the step during which an AED should be used, even though it is in the flowchart (Figure 300-2-9-2) and is in item h, the "summary principles".	not applicable. Section deleted.
John Lastowski		300-2.9.4.4	Conflicts with the guidance in 300-2.9.4.2 d. (4), which states that chest compressions should be given at a rate of 30 compressions per minute when two rescuers are working together.	not applicable. Section deleted.
John Lastowski		300-2.9.4.5	The font is different from the rest of the chapter.	Corrected
CDR Gelker		300-2.9.5	Font issues	corrected
Mark Klung		300-3.1.6.3	<i>Current Wording:</i> Operators shall be qualified in the use of the equipment. <i>Recommended Change:</i> Operators shall be qualified in the use of the equipment in accordance with NSTM Ch 504. <i>Justification:</i> Need to define qualification standard.	disagree. Chapter 504 is not necessarily the correct reference in all case. No change required.
Jim Kaufman		300-3.1.6.3 c	safety precautions, and permission levels should be specified for thermal imaging.	intent incorporated in visula inspection section..
Jim Kaufman		300-3.1.6.3 c	labeled as DC systems, but should be AC	could not identify applicbale section with comment. No change.
Jim Kaufman		300-3.2.4	Ground detectors should be 300-3.2.5	incorporated.

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Dennis Neitzel		300-3.2.5	Update to read 'sub-distribution' not 'sub distribution'	incorporated
Stephen Rourke		300-3.3.2	Expand upon when referring to breaker clips. (1) Breaker clips should be used on all circuit breaker isolations, except breakers within a cabinet with a cover secured by fasteners or when the breaker is located in an enclosed space that does not have access to through traffic and no work is planned for the space.	disagree. Navy does not require lockout as in commercial applications. Breaker clips not a requirement.
Charles Burton		300-3.4.1.3 & 300-3.4.12	refer to table 300-3-11 nomogram. This table is not a nomogram but a listing of correction factors. I also don't see how this correction factor is to be used (multiply by obtained resistance?)	Concur. ITT to add Table 300-3-11 with Nomograph in REV 7. keep correction factor table for clarification. - ITT Action Complete 3/8/11
Jim Kaufman		300-3.4.12	last sentence refers to a nomograph, but Table 300-3-11 is a conversation chart.	Concur. ITT to add Table 300-3-11 with Nomograph in REV 7. keep correction factor table for clarification. - ITT Action Complete 3/8/11
Mark Klung		300-3.4.12	<i>Current Wording:</i> For most equipment, including induction motors, the minimum acceptable value of PI is 2.0. There are unique equipments that because of their construction cannot achieve values of PI as high as 2.0. Examples of such equipment are some exciters and DC armatures. The repair activity is responsible for establishing minimum values of PI for these equipments that cannot attain a PI of 2.0. <i>Recommended Change:</i> For most equipment, including induction motors, the minimum acceptable value of PI is 2.0. There are unique equipments that because of their construction cannot achieve values of PI as high as 2.0. Examples of such equipment are some exciters and DC armatures. The repair activity is responsible for establishing minimum values of PI for these equipments that cannot attain a PI of 2.0. When insulation resistance quickly rises to a high value (> 1000 meg-ohm) and maintains high, there is no need to recondition equipment regardless of PI.	incorporated.
Mark Klung		300-3.4.12	<i>Justification:</i> In practice, sometimes the insulation resistance of a winding will rise very quickly to a high value (> 1000 meg-ohm) which would produce a PI lower (sometimes much lower) than 2, however this is typically not unsat.	incorporated.
CNSL N43		300-3.5	Para 3.5 a noticed typo – Caution DC... the dc is presently lower case.	incorporated

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Dennis Neitzel		300-3.5.2.2 f	Delete James G. Biddle Company and 19462 Model 22005. This model no longer exists – go to <a href="http://www.megger.com">www.megger.com</a> for current information.  Add Megger information Megger® 5-kV Megohmmeter – 210400 Megger® 15-kV Megohmmeter – 210415	Incorporated.
Dennis Neitzel		300-3.5.2.2 f	Update Associated Research, Inc. information address: 13860 W. Laurel Drive Lake Forest, IL 60045 Model 3705 – 5kv AC Hipot Tester Model 3765 – 5kv AC / 6kv DC Hipot Tester Model 3770 – 5kv AC / 6kv DC, w/IR Hipot Tester	Incorporated.
Mark Klung		300-3.5.2.3	<i>Current Wording:</i> Before conduction the high-potential test, discharge the windings to ground as specified in paragraph 300-3.5.2. <i>Recommended Change:</i> Before conducting the high-potential test, discharge the windings to ground as specified in paragraph 300-3.2.7.3. <i>Justification:</i> Reference to correct paragraph for guidance.	incorporated intent.
CNSL N43		300-3.5.2.3.2	Para 300.3.5.2.3.2 calls for a long discharge to ground after a DC hi pot test. What reference gives such a long time requirement (4 times the test time)?	no change required.
Dennis Neitzel		300-3.5.3 and global	(hipot® is a registered trade name for Associated Research, Inc.) Delete hipot and replace with high-potential.	no change required.
Johnathan Gatliff		300-3.5.4.2.4 b	Impedance is spelled wrong.	incorporated.
Dennis Neitzel		300-3.5.4.3	Update first sentence to read “...surge tester manufacturer’s instructions.”	incorporated
Charles Burton		300-3.5.4.6	Test Voltage: SI motors to be tested to 4000 volts seems excessive. Request confirm.	this is a reduction by 1000V from REV 7. No change required.
Jim Kaufman		300-3.5.4.6 1 and 2	spacing on wording incorrect, formatting should be checked	N/A
Jim Kaufman		300-3.5.5	word spacing incorrect	Final edit incorporated. - ITT Action Complete 4/18/11
Mark Klung		300-3-1	<i>Current Wording:</i> Note 1. Set B – Normal operating volt-ampere rating up to 2000. <i>Recommended Change:</i> Note 1. Set B – Normal operating volt-ampere rating of 50 to 2000. <i>Justification:</i> To be consistent with MIL-E-917.	concur. Incorporated.

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Mark Klung		300-3-2	<p><i>Current Wording:</i> Typical Ground Detection Circuitry. This figure depicts an AC system, but is captioned as a DC system.</p> <p><i>Recommended Change:</i> Change caption to "AC System" for "B".</p> <p><i>Justification:</i> Incorrect caption to figure.</p>	ITT redrawing figure concurrently with SIB review.
Mark Klung		300-3-3	<p><i>Recommended Change:</i> Maximum Temp Rise. This table does not match similar Max Temp Rise tables in MIL-M-17060F or MIL-DTL-17060G. Too many inconsistencies to list.</p> <p><i>Justification:</i> Are these values intentionally different than MIL-M-17060? Recommend scrutinizing this table closely.</p>	Table is general guidance, refer to updated Mil-DTL-17060G table is unchanged from rev 7
Mark Klung		300-3-5	<p><i>Current Wording:</i> Minimum Linsulation Resistance Values for Isolated Cables. Paragraph 3.3.1.4 states that cable insulation resistance should be temperature corrected based on cable jacket temperature, however Table 300-3-5 accounts for temperature already.</p> <p><i>Recommended Change:</i> Recommend clarifying that values of Insulation Resistance are actual measured (not temperature corrected) when utilizing Table 300-3-5.</p> <p><i>Justification:</i> Clarification.</p>	NAVSEA 05Z needs to contact shipyards to determine if these new words are really required.
CNSL N43		300-4.1.1.1	Para 300-4.1.1.1 – about the middle of the paragraph we have "Check the wiring diagram to determine if there are any capacitors that should be discharged by connecting their terminals to each other and to ground by use of a wire on an insulated handle." Perhaps we should reference the capacitor de-energizing paragraph in chapter 2?	Paragraph changed to reference section 300-2.5
Mark Klung		300-4.1.1.2	<p><i>Current Wording:</i> No text for this paragraph</p> <p><i>Recommended Change:</i> Recommend deleting this paragraph, this will not affect subsequent numbering.</p> <p><i>Justification:</i> Editorial.</p>	incorporated
CNSL N43		300-4.1.1.2	This is a blank paragraph and thus should be deleted	incorporated
CNSL N43		300-4.1.2	Para 300-4.1.2 PURPOSE OF MAINTENANCE. The essential purpose of maintenance is to ensure that equipment is in all respects ready for service at all times. I disagree. Isn't the purpose of maintenance that the equipment be ready for service when needed?	no change required.
Dennis Neitzel		300-4.11.3	Insert period after Batteries in paragraph heading.	incorporated

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Jim Kaufman		300-4.11.3	word spacing incorrect	incorporated
Mark Klung		300-4.11.3	<i>Current Wording:</i> Batteries Essential all UPS system use Lead-Acid type batteries to provide the DC voltage to the inverter. <i>Recommended Change:</i> Batteries. Essentially all UPS system use Lead-Acid type batteries to provide the DC voltage to the inverter. <i>Justification:</i> Missing punctuation	incorporated
Johnathan Gatliff		300-4.2.3	the "c" in National Electrical Code is not capitalized. Recommend capitalizing this.	incorporated
CNSL N43		300-4.2.3	Para 300-4.2.3 EXPLOSION-PROOF ENCLOSURES. The gaps between the joint surfaces of explosion proof , group D enclosures ... National Electric code (NEC) -NFPA -70, and will... Typo (There is an extra space before the comma after proof.)and a question: are we referencing NFPA 70 or 70E? If it is the E then it should be inserted.	incorporated
Dennis Neitzel		300-4.2.3.2	Update to read 'non-sparking' not 'non sparking'.	incorporated
CNSL N43		300-4.2.4.1	35. Para 300-4.2.4.1 Ship's 3-M System. The Ship's 3-M System consists of two systems: a. Planned Maintenance System (PMS) Concerned with preventive maintenance b. Maintenance Data System (MDS) Concerned with the collection of maintenance and configuration data. Para 300-4.2.4.2 Maintenance Data System (MDS). The MDS is a system for the collection of data concerning corrective maintenance and configuration changes .... • We say there are 2 parts: PMS and MDS. Then we only describe MDS. Seems odd. Shouldn't there be a 1-2 sentence description of PMS included? Perhaps we could say something like "PMS is a database of procedures and scheduling aides to guide the maintainer in planning and performing preventive maintenance and is covered in detail in the PMS reference guide XXX"... or something like that.	deleted section 300-4.2.4.2
Stephen Rourke		300-4.3 1	Add ensure personnel can have immediate communication so that a SWBD can be de-energized immediately in an emergency.	no change required
Jim Kaufman		300-4.4.5 k 2	word spacing incorrect	Final edit incorporated. - ITT Action Complete 4/18/11
Johnathan Gatliff		300-4.4.5 k 2	is very hard to read with the given spacing. Recommend reformatting this paragraph for ease of reading and understanding.	Final edit incorporated. - ITT Action Complete 4/18/11
CDR Gelker		300-4.5.6	Warning is prior to section and currently on a different page and may be missed. Need to keep warning with section.	Concur. Incorporated.



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Mark Klung		300-4.5.6	<p><i>Current Wording:</i> Core Testing. Note 4 – discusses isolating the shaft when testing armatures should be applicable to DC armatures only.</p> <p><i>Recommended Change:</i> Recommend changing to “DC Armature” to prevent confusion with AC armatures (motor stators).</p> <p><i>Justification:</i> Clarification, since armatures for DC machines are typically the rotor (with shaft), and are stators for AC machines.</p>	No change required. The caution is applicable in both cases.
CDR Gelker		300-4.5.6	Caution is in different format.	incorporated
Johnathan Gatliff		300-4.5.6.1 b	Densitiin? Is it supposed to be Densities?	changed to "density in"
Johnathan Gatliff		300-4.5.6.1.11 e	Equivalent is spelled equavilent.	incorporated
Howard Snyder		300-4.5.7.5	Add sentence to end of paragraph "Shore based activities should use Mil Spec solvent varnish where allowed by law. This should be the preferred first option. If solvent varnish is not allowed, use a solventless varnish as an alternative."	do not concur due to EPA requirements. No change required.
Jim Kaufman		300-4.5.7.6 c 2	the type of DFS should be specified (temporary or permanent) and guidance provided on how to clear the DFS. Recommend allowing the DFS to remain active until next rewind is required or the next CNO availability whichever comes first.	Do not concur. DFS are case dependent. No change required.
CNSL N43		300-4.5.7.6 d 1	Para 300.4.5.7.6.d.1 calls for motors to be rewound via SIS, but should read "unless para. 300.4.5.7.6.d.4 conditions cannot be met."	no change required.
CNSL N43		300-4.5.7.6 d 2	Para 300.4.5.7.6.d.2 calls for motors to be rewound via SIS, but should read "unless para. 300.4.5.7.6.d.4 conditions cannot be met."	no change required.
CNSL N43		300-4.5.7.6 d 3	Para 300.4.5.7.6.d.3 calls for motors to be rewound via SIS, but should read "unless para. 300.4.5.7.6.d.4 conditions cannot be met."	no change required.
NAVSHIPYD PTSMH		300-4.5.7.6 d	Paragraph 300-4.5.7.6.d specifies that a conventional, non-SIS winding that fails due to low insulation resistance, excessive wire movement, or partial discharge in less than two years shall be rewound to a SIS. In many cases, regional maintenance centers and other repair activities do not have historical information to determine how long a motor was inservice. Thus, the paragraph does not provide direction in these instances. Recommend adding a sub-paragraph "d.5" that reads: "In many instances, in-service historical information is not available to regional maintenance centers and other repair activities. In these instances all conventional windings that fail due to low insulation resistance, excessive wire movement, or partial discharge shall be rewound to a SIS."	No change required. Needs to be adjudicated on a case basis.

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Howard Snyder		300-4.5.7.6 d	Add numbered item 5 to read "5. In many instances, in-service historical information is not available to regional maintenance centers and other repair activities. In these instances, all conventional windings that fail due to low insulation resistance. Excessive wire movement, or partial discharge shall be rewound as SIS."	intent of this guidance is already contained in this section. No change required.
Howard Snyder		300-4.5.7.7.1 b	equivalent not equivalent	incorporated
NAVSHIPYD PTSMH		300-4.5.7.9	Paragraph 300-4.5.7.9 first sentence should be changed to read: "All rewound components shall be given vacuum-pressure impregnation using solventless epoxy or polyester resin, per MIL-I-24718, followed by dips in a solvent type modified polyester varnish, per MIL-I-24092, Class 155."	Incorporated via Chuck Fridell/Howie Snyder comments.
Howard Snyder		300-4.5.7.10 a 2	change "recautions" to "precautions"	incorporated
Howard Snyder		300-4.5.8.2	Add sentence after sentence ending "...prohibit the use of solvent varnished" to read "All Shipboard varnish dip tanks must use either Esterlite 605 or Isolite 862M solventless varnish per MIL-I-24718."	incorporated
NAVSHIPYD PTSMH		300-4.5.8.2.2	Paragraph 300-4.5.8.2.2 should be changed to read: "Resins used in the vacuum-pressure impregnation process (see paragraph 300-4.5.8.8) are solventless per MIL-I-24718. The solventless resin should not be hinned with solvent under any circumstance."	See comment 837.
Howard Snyder		300-4.5.8.2.2	Chagne "Varnishes" to "Resins", "varnish" to "resin" and "conditions to circumstance"	no change required.
NAVSHIPYD PTSMH		300-4.5.8.2.4	Paragraph 300-4.5.8.2.4 should be changed to read: "Red-Pigmented paints and alkyd-type varnishes shall not be used on any windings or coils for electrical equipment." This change addresses the various red insulating paint products that are not recommended by COMNAVSEASYS.COM.	See comment 837.
Howard Snyder		300-4.5.8.2.4	Update to read "Red-pigmented paints and alkyd-resin-type..."	no change required.
Dennis Neitzel		300-4.5.8.6 c	Update to read 'provided' not 'provised'.	incorporated
Howard Snyder		300-4.5.8.6.15	Change "kraft" to "Kraft"	incorporated

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Howard Snyder		<p>300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)</p>	<p>Add Section 300-4.5.9 because of the IN-SERVICE ENGINEERING (ISE) ADVISORY NO.030-10, ELECTRIC MOTOR DIP TANK INSULATING VARNISH received from Kurt Doehnert SEA 04 04X. Add as follows:</p> <p>300-4.5.9 DIP AND BAKE CONSIDERATIONS USING A SOLVENTLESS VARNISH. Considerations. Except for baking, the varnishing process is similar to that used with solvent-containing varnishes. However, varnish build and coverage is increased if intermediate dips are baked just beyond the point where the solventless varnish is tacky. In this condition, the varnished surface allows for greater adherence of the following dip. The time to reach this point in the curing cycle varies with the mass of equipment being varnished and with the oven characteristics. Repair activities must establish guidelines for the intermediate bake times for differently sized equipment using their ovens. After the final dip, the varnish should be completely cured by baking the equipment for the duration shown in Table 300-E-1.</p> <p>NOTE</p> <p>One coating of varnish is usually sufficient when reconditioning windings. The winding undergoing reconditioning has several coats of varnish on it. The coat put on during reconditioning is intended to seal any minute cracks that have developed due to vibration and thermal cycling. If the base coat type is unknown and the solventless varnish runs off a winding during reconditioning</p>	<p>Incorporated viaChuck Fridel/Howie Sbyder comments</p>
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Howard Snyder	300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)	<p>Table 300-4-4 Varnishing Procedure: Solventless Varnish (Editor's Note: See worksheet 3 for suggested table.)</p> <p>300-4.5.9.1 CHARACTERISTICS OF VARNISH.</p> <p>a. Solventless Varnish. Solventless dip varnish must be used when environmental regulations prohibit the use of solvent-containing varnishes. NAVSEA is the point of contact for information on acceptable solventless varnishes. See Para 300-4.5.7.5 for Solvent Type Varnish facility use.</p> <p>NOTE</p> <p>Solventless varnishes Isolite 862M and Esterlite 605 per are approved for use by all IMAs which include repair activities physically located shipboard. Follow the manufacturer's instructions for use.</p> <p>300-4.5.9.1.1 Shipboard repair activity requirements. Repair activities physically located shipboard are required to use solventless dip varnishes. Their high flash point, greater than 200° F (93° C) eliminates the fire hazard posed by solvent-containing varnishes. Solventless varnish should also be used by repair activities required to meet environmental regulations limiting the emission of volatile organic compounds (VOCs) into the atmosphere. Some solventless varnishes are not suitable for use with submarine equipment because the cured varnish emits excessive levels of undesirable chemical compounds into the atmosphere. Testing done under the auspices of the Submarine Materials Control Program has identified solventless varnishes that are suitable for use with submarine equipment. Equipment for use on surface ships may be varnished using any solventless varnish determined by the cognizant Naval Supervising Activity to be acceptable in accordance with NAVSEA S9086-KC-STM-010/CH 300.</p>	Incorporated via Chuck Fridel/Howie Sbyder comments
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Howard Snyder		300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)	<p>300-4.5.9.1.2 Bond Strength. This type of varnish typically has a greater bond strength than solvent-containing varnish; however, varnish build is often less than half of that of the solvent-containing types. Most solventless varnishes will not overcoat windings that have been previously treated with any of a wide variety of solvent-containing varnishes used by naval and commercial activities. When using solventless dip varnishes, the dipping procedures in Table 300-E.1 may be modified by the varnish manufacturers procedure. Although solventless varnishes have not shown that multicoating is successful, three dips and bakes are recommended to ensure adequate single coat coverage. Solventless dip varnishes should not be used to overcoat windings that have been previously treated with silicone varnish. Because of their chemistry, these windings offer a poor surface for revarnishing.</p> <p>CAUTION Compatibility tests must be conducted between varnish held in the dip tank for over a month and varnish from closed containers. Do this even though manufacturer and batch numbers are the same.</p> <p>300-4.5.9.2 TERMINOLOGY USED WITH SOLVENTLESS VARNISH.</p> <p>300-4.5.9.2.1 Solventless Polyesters. These resins consist of a solid resin dissolved in a liquid monomer such as vinyl toluene, or DAP (diallyl phthalate). They are referred to as reactive or unsaturated, polyesters . They do not contain solvent. Instead, the monomers react with the basic resin and become part of the final, cured coating. Solventless resins or varnishes are sometimes referred to as 100-percent solid materials . Since there are no solvents to evaporate, there is less likelihood of blistering, bubbles, and cavities.</p>	
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Howard Snyder		<p>300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)</p>	<p>300-4.5.9.2.2 Solventless Epoxies. Like the solventless polyesters, these materials contain no solvents. The base material is a high-viscosity liquid epoxy. A selective amount of a diluent, which is a low-viscosity epoxy, is added to yield the final desired viscosity range. The solventless epoxies have certain properties that distinguish them from the solventless polyesters.</p> <p>300-4.5.9.2.3 Other Liquid Polymeric Materials. This category includes materials that, for one reason or another, are not as popular as the materials covered above.</p> <p>300-4.5.9.2.4 Polybutadienes. This class of polymeric material consists of an aliphatic hydrocarbon resin dissolved in a solvent or monomer mixture, usually consisting of naphtha, xylene, and/or vinyl toluene.</p> <p>300-4.5.9.2.5 Silicones. These are resinous materials made from compounds, which in place of the usual carbon backbone, have a backbone of silicon and oxygen atoms. Such a structure offers excellent resistance to oxidation at elevated temperatures. Silicone resins are not to be used on enclosed rotary Navy equipment that operates with carbon brushes since certain silicone vapors can cause severe commutation problems such as excessive brush wear. Solvent solutions of these silicone polymers have been used as varnishes for many years and are recognized for their outstanding long-term thermal resistance. However, in recent years they have been replaced with specially modified polyesters which have slightly less thermal stability but offer higher bond strengths at elevated temperatures.</p>	Incorporated via Chuck Fridel/Howie Sbyder comments
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Howard Snyder		300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)	<p>300-4.5.9.2.6 Patching Kits. These consist of polymeric materials for temporary insulation where damage to the Insulation has occurred. Patching kits can be a single component polyurethane varnish, supplied in a can for brush application or in a pressurized container for spray applications. These kits can also consist of a two-component epoxy system designed for relatively quick solidification. Since this system is solventless, it may offer an advantage when toxicity and low flash point are critical.</p> <p>300-4.5.9.2.7 Thixotropic Varnishes. These are a class of varnish materials in which the flow characteristics have been modified so that the normal build, or coating thickness, is greatly increased. Thixotropy , by definition, is the ability of certain colloidal gels to liquefy when agitated (as by shaking or ultrasonic vibration) and to return to the gel form when at rest. Most electrical varnishes yield a build between 0.5 and 1.2 mils after one dip or treatment. The thixotropic materials will yield 2 to 10 mils, depending on the degree of modification. This special modification is accomplished through the addition of a thixotropic agent which is normally a finely ground mineral filler. This addition is made by the manufacturer but, in some cases, slight additions have been made at the varnish treating facilities to reestablish the original degree of thixotropy. For Navy applications, thixotropic modification has been used only with the solventless type of varnishes and only with the vacuum-pressure impregnation (VPI) process. There is the possibility in the future that these materials may be used in the dip and bake process.</p>	Incorporated viaChuck Fridel/Howie Sbyder comments
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Howard Snyder	300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)	<p>300-4.5.9.2.8 Cure. A varnish or resin must be thoroughly cured or polymerized to achieve its intended purpose. An electrical varnish is designed to provide: mechanical bonding, environmental protection, and a dielectric barrier between points of differing electrical potential. If the varnish has not been adequately polymerized, that is, chemically or thermally reacted from a liquid to a solid state, it will not fully provide these functions.</p> <p>300-4.5.9.3 VARNISH SELECTION CRITERIA.</p> <p>300-4.5.9.3.1 Solventless Varnishes. They are qualified by MIL-I-24718. Repair activities are responsible for reviewing the Mil-Spec for evaluation and selection of these commercially available varnishes. In addition the following guidance is provided to assist activities in this process.</p> <p>300-4.5.9.3.2 Procurement Guidelines. As a minimum, the varnish manufacturer should be provided the following information at the beginning of the selection process:</p> <ol style="list-style-type: none"> <li>1. Operating environments and types of equipment to be varnished.</li> <li>2. Description of other insulating materials to be used.</li> <li>3. Insulation class of equipment to be varnished.</li> <li>4. Estimated average temperature of the varnish in the dip tank.</li> <li>5. Estimated rate of varnish usage.</li> <li>6. Local environmental and fire safety regulations.</li> </ol> <p>300-4.5.9.3.3 Varnish characteristics. Varnish characteristics such as bond strength, dielectric strength, varnish build, and others identified in MIL-I-24092 should be evaluated and compared to assist in choosing the most capable varnish.</p>	Incorporated via Chuck Fridel/Howie Snyder comments
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Howard Snyder		<p>300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)</p>	<p>300-4.5.9.3.4 Evaluation. Evaluation of solventless varnish must include a demonstration of compatibility between the varnish and the principle components of the insulation system, including magnet wire, slot insulation, sleeving, and insulating tapes. The varnish should provide a uniform coating, should penetrate materials as required, and should not react adversely with the insulating materials. Materials should be checked for delamination and other physical changes after soaking in varnish. The repair activity should verify that the varnish has been qualified with the repair activity's magnet wire and slot material per National Electrical Manufacturers' Association (NEMA) standard, REV 2.</p> <p>300-4.5.9.4 FUNCTIONAL CONSIDERATIONS OF VARNISH.</p> <p>300-4.5.9.4.1 Solventless Varnishes. These materials are used primarily when maximum bond strength is required. They yield a smooth, even coating. Since no solvent is being removed in the baking process, holes and blisters usually do not form.</p> <p>300-4.5.9.4.2 Solventless Thixotropic Varnishes. Solventless varnishes are more effective when they are modified for thixotropy (paragraph 10-3.8). This results in a much heavier varnish build per application and effectively increases the total encapsulation. This results in a strong, unified coil structure for motors, generators, and motor generator sets.</p> <p>300-4.5.9.4.3 Gel Time of Solventless Varnishes. The gel time of a solventless resin is a measure of the reactivity of the resin, monomer, and catalyst system. If the gel time is too long, an optimum coating will not be achieved because some of the resin ingredients may evaporate in the curing oven before polymerization occurs. It may also result in an inadequate coating thickness since the resin will stay in a liquid state for a longer period of time, and will tend to run off of vertical and inclined surfaces.</p>	Incorporated viaChuck Fridel/Howie Sbyder comments
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Howard Snyder		300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)	<p>300-4.5.9.4.4 Requirements. The gel time shall meet the requirements for periodic conformance as specified in the individual specification sheets of MIL-I-24092.</p> <p>300-4.5.9.4.5 Thixotropic Index. The thixotropic index measures the degree of resin retention on this equipment as it is being cured in this oven. A thixotropic solventless resin is used when heavy builds are required. The normal build for a solvent-containing varnish is on the order of 1 mil Using solventless resins that have been modified for thixotropy, the build may reach 10 to 12 mils. As the tank resin is used, and as it ages, some undesirable changes may occur. With thixotropic materials, resin retention is adversely effected and the thickness of the coating will be less than required. Thixotropy is best measured by comparing the resin viscosity measured at a low speed to the viscosity measured at a higher speed. The ratio of the low speed to the high speed viscosity yields the thixotropic index.</p> <p>300-4.5.9.4.6 Requirements. The thixotropic index must meet the requirements of the individual specification sheets of MIL-I-24092. The test report shall include: model number of Brookfield viscometer, speed of rotation, spindle number, average viscosity at each speed, and calculated thixotropic index.</p>	Incorporated viaChuck Fridel/Howie Sbyder comments
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Howard Snyder		300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)	<p>300-4.5.9.4.7 Solventless Varnish Uses. As the solventless materials have become more widely used, the solvent-containing varnishes are now limited to specialized applications such as the finish or top-coat varnish. They are the preferred varnish for overcoating the solventless resin since they yield a very glossy finish. After an electrical apparatus has been treated with this type of varnish, the solvent immediately begins to evaporate and, usually after less than 1 hour, depending on the temperature and local air movement, it dries to a tack-free coating. At this stage, the coating must be baked to achieve its final properties. Once this bake cycle is completed, the varnish coating has a high gloss and, although hard, is capable of absorbing the mechanical and thermal movements necessary for normal equipment performance.</p> <p>300-4.5.9.5 VARNISH COMPATIBILITY. All varnish received from stock should be from the same manufacturer or have the same batch number. It is sometimes necessary, however, to mix varnish from different manufacturers or with different batch numbers. In this case, compatibility of the different varnishes must be proven by testing. Varnish compatibility is essential because mixing two incompatible varnishes will produce clouding and precipitation. An incompatible mix will not produce a good, adherent surface. Use the following procedure to test varnish compatibility:</p> <p>a. Draw a small sample of varnish from each manufacturer or batch. Mix the samples together thoroughly.</p> <p>CAUTION Certain varnishes not qualified under MIL-I-24092 are likely to be incompatible with varnish qualified under MIL-I-24092.</p> <p>NOTE Esterlite 862M solventless varnish has a high degree of compatibility with DAP and VT-based varnishes. However, a compatibility test is essential. Precipitation means that particles drop out and separate from the rest of the varnish.</p>	Incorporated via Chuck Fridel/Howie Sbyder comments
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		300-4.5.9 - 300-4.5.9.6 (suggested new paragraphs)	<p>b. Check the mix for precipitation, excessive thickening, or other signs of incompatibility.</p> <p>300-4.5.9.6 SOLVENTLESS VARNISH TESTING. Gel time measurement requires specialized test equipment that is not suitable for the shipboard environment. The varnish manufacturer should be requested to perform a periodic varnish evaluation, including gel time testing, as a service to each activity using the varnish. The evaluation should be performed quarterly or more frequently if warranted. The repair activity should submit a sample of varnish to the manufacturer for evaluation. The manufacturer will submit a report to the address provided by the repair activity. The report will identify any action required by the repair activity to modify the varnish in the tank. For more information on gel time and the associated test procedures, see paragraph 300-4.5.9.4.3 . Since its components do not separate, solventless varnish does not require circulation in the tank. Since its components do not separate, solventless varnish does not require circulation in the tank.</p>	Incorporated via Chuck Fridel/Howie Sbyder comments
Howard Snyder		300-4.6.11.4	Change 'barriers' to 'boundaries'	No change required.
CNSL N43		300-4.6.6	Para 4.6.6 Cable Replacement – is this the place to discuss the newly discovered problem with overheated cables? The possibility that a severely overheated cable's water-block conductive paste has become an insulator is information that the Fleet should be made aware of. No where do we have the conductivity of overheated cables verified.	This issue is a design issue and therefore, no change is required to the NSTM. NSWG to adjudicate action for Gary Small.
CNSL N43		300-4.6.6.3	Para 300-4.6.6.3 talks about cables with poor insulation resistance, but is too vague in the replacement requirement, saying poor readings may still allow the cable to be used. Recommend telling technicians the exact amount or % acceptable.	No change required. Basis or paragraph is application of appropriate engineering judgment.
CDR Gelker		300-4.6.7.1	Provide full title and number for NAVSEA Instruction.	Comment incorporated
Dwight Williams		300-4.6.7.1	2. Should step 300-4.6.7.1 reference the "carrier letter" for cableway inspections. Nothing references that letter that I know of. So how does anyone know it's out there if you're not in "the loop".	No change required. This is a higher-level document, not appropriate to reference project-specific reference.
CNSL N43		300-4.6.8	Para 300.4.6.8 discusses ship cable splices....if done IAW EPISM, why can't S/F perform a permanent splice?	Intent of comment is incorporated.

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Mark Klung		300-4.6.8.1	<p><i>Current Wording:</i> Cable Repair...</p> <p><i>Recommended Change:</i> Add "g. 4160 VAC Service Cable unless approved by NAVSEA or their designated representative &amp; h. 13.8 KV service cable."</p> <p><i>Justification:</i> There is currently no NAVSEA approved repair procedure for 13.8 KV cables. There is a cable splice procedure for 4160 VAC cable and applicable portions can be made applicable for repair. Splicing of 4160 VAC cables is prohibited by GSO.</p>	Comment is incorporated.
Charles Burton		300-4.6.8.2	<p>Another item. Para. 300-4.6.8.2 of Chapter 300 is at odds with the latest rev of the EPISM.</p> <p>300-4.6.8.2 Cable Splicing. A cable splice is the restoration on any part of a cable that cannot be restored by a cable repair. All cables may be spliced except:</p> <ul style="list-style-type: none"> <li>a. Radio frequency coaxial types</li> <li>b. Antenna system cables (both inboard and outboard)</li> <li>c. Cables for repeated flexing service (see d)</li> <li>d. Portable cables</li> <li>e. Cables in voids</li> <li>f. Cables in normally inaccessible spaces</li> <li>g. Cables in hazardous spaces (i.e., spaces requiring explosion proof enclosures)</li> <li>h. MDU (conforming to MIL-DTL-915/12, formerly MIL-C-915/12) cable exposed to the weather</li> <li>i. dc bus tie cables on nuclear submarines unless approved by NAVSEA 08</li> <li>j. Reactor plant system cables unless approved by NAVSEA 08.</li> <li>k. Security Alarm Circuit 4FZ Cables, unless otherwise approved by NAVSEA or their designated representative.</li> <li>l. Steam and electric plant cables, unless otherwise approved by NAVSEA or their designated representative</li> </ul>	DOD-STD-2003 Is invoked. Intent of comment is incorporated. NSWG action to verify current EPISM wording and report to SEA 05Z.
Charles Burton		300-4.6.8.2	<p>EPISM (MIL-STD-2003):</p> <p>4.1.11 Cable splicing. Cables identified on figure 1E1 shall not be spliced. Antenna system cables may be spliced where specific approval is requested and received on a case-by-case basis from NAVSEA.</p>	Intent of comment is incorporated.

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Mark Klung		300-4.6.8.2	<p><i>Current Wording:</i> Cable Splicing...</p> <p><i>Recommended Change:</i> Add "m. 4160 VAC Service &amp; n. 13.8 kV service cable."</p> <p><i>Justification:</i> There is currently no NAVSEA approved splice procedure for 13.8 kV cables. There is a cable splice procedure for 4160 VAC cable. Splicing of 4160 VAC cables is prohibited by GSO. Splicing of both is prohibited by carrier ships' specs. Approval of cable splices for these cables will be treated as a non-conformance</p>	Intent of comment is incorporated.
Mark Klung		300-4.6.8.2.3	<p><i>Current Wording:</i> The installing activity shall obtain written approval from NAVSEA prior to making a cable splice:...</p> <p><i>Recommended Change:</i> The installing activity shall obtain approval from NAVSEA or their designated representative prior to making a cable splice:..</p> <p><i>Justification:</i> Determination of when NAVSEA approval is required for a cable splice should be as determined by the ACO organization including SUPSHIP and naval shipyards.</p>	Intent of comment is incorporated.
CNSL N43		300-4.6.8.2.3	Para 300.4.6.8.2.3 discusses requesting approval from NAVSEA for splicing...why? If done IAW EPISM, no reporting requirement exists. This entire section is vague, as I believe it is trying to differentiate between approved and unapproved repair processes for cable. Reread for sanity check?	Intent of comment is incorporated.
Jim Kaufman		300-4.7.19.2 8 a	word spacing incorrect	Final edit incorporated. - ITT Action Complete 4/18/11
Dennis Neitzel		300-4.7.19.2-8-b	Update to read 'complete' not 'Complete'.	Change is incorporated.
Howard Snyder		300-4.7.5.2	Change 'barrier' to 'boundary'	No change required.
Dennis Neitzel		300-4.7.7.4 a	Update to read 'direction' not 'directon'.	Change is incorporated.
Dennis Neitzel		300-4.7.7.5.4	Update to read 'milli-voltmeter' not 'milli voltmeter'.	No change required.
Dennis Neitzel		300-4.7.8.3.2 Caution	Update to read 'Personnel' not 'personel'.	Change is incorporated.

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Mark Klung		300-4.7.9.3.8	<p><i>Current Wording:</i> Stoning Slip Rings. The intent of this paragraph is unclear. Is this paragraph attempting to state that machining slip rings with a tool bit is preferable to stoning?</p> <p><i>Recommended Change:</i> Recommend revising or elaborating to clarify.</p> <p><i>Justification:</i> Clarification.</p>	Section deleted. Required information is contained in specific instructions.
		300-4.7.11.2	New section on Compound Motor Polarity Test	Change Incorporated
Stephen Rourke		300-4.8.1.1	Could reference Corporate Instruction CEI-0051-101 for Stray Voltage Handling Procedure During initial Voltage Verification (IVV).	No change required. Applicable guidance is issued in IVV procedure.
CDR Gelker		300-4.8.1	Need to add wording discussing requirement for isolation and tag-out. Currently only mentions "de-energizing" equipment.	Comment is incorporated.
Dennis Neitzel		300-4.8.1.2.1	Update to read 'non-vital' not 'non vital'.	Change is incorporated.
CDR Gelker		300-4.8.1.2.1	Do we mean to have 2 references for 30 amp fuse clips or should 1 be for another amp rating?	Both are 30 Amp, one has a stop, and annotated in text.
Mark Klung		300-4.8.2	<p><i>Current Wording:</i> A Vacuum cleaner, if available, can also be used to advantage.</p> <p><i>Recommended Change:</i> A vacuum cleaner, if available, should also be used.</p> <p><i>Justification:</i> Ensures thorough cleaning without simply redistributing dust to other areas of switchboard.</p>	Change is incorporated.
CDR Gelker		300-4.8.2	Need to add wording discussing requirement for isolation and tag-out. Currently only mentions "de-energizing" equipment.	Comment is incorporated.
CDR Gelker		300-4.8.3	Need to add wording discussing requirement for isolation and tag-out. Currently only mentions "de-energizing" equipment.	Comment is incorporated.
Mark Klung		300-4.8.3.10	<p><i>Recommended Change:</i> ADD: All current-carrying friction joints and pivot points shall be lubricated with NO-OX-ID-A Special contact grease (NSN 4470-01-424-7665). All non-current-carrying pivot points and all points where there is movement between parts shall be lubricated with Mobilgrease 28 in accordance with NAVSEA letter 9310/05Z32/054, dated 20 Nov 2007.</p> <p>NOTE: The continued use of light machine oil (2190 TEP) shall be permitted for those circuit breakers that are currently lubricated with 2190 TEP and do not require removal from the ship for maintenance. This is an interim measure during the transition from 2190 TEP to the Mobilgrease 28.</p> <p><i>Justification:</i> This was taken from the CVN68 Class breaker maintenance instructions, and was modeled from SUBMEPP guidance.</p>	Comment is incorporated.

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Charles Burton		300-4.8.3.11	Add precaution – Older style circuit breakers may contain asbestos. (ISEA Advisory 005-10, DTG 221418 Z FEB10.)	Change is incorporated.
Mark Klung		300-4.8.3.11	<i>Current Wording:</i> Arc chutes should be cleaned by scraping with file if wiping with a cloth is not sufficient. <i>Recommended Change:</i> Evaluate <i>Justification:</i> Some older arc chutes on ACB type breakers contain asbestos. Filing as described could cause the fiber to become airborne. Remove sentence or add a caution.	Change is incorporated.
CDR Gelker		300-4.8.3.11	Section needs modification due to recent discovery of asbestos in some of these components. Scraping and filing is no longer authorized as it will create dust fibers. George Rasich has recently updated circuit breaker manual to incorporate and has been asked to provide new guidance and a warning for this section.	Change is incorporated.
Mark Klung		300-4.8.3.2	<i>Current Wording:</i> ...and properly alined. <i>Recommended Change:</i> ...and properly aligned. <i>Justification:</i> Spelling error	Change is incorporated.
Mark Klung		300-4.8.3.6	<i>Current Wording:</i> If poor alinement... <i>Recommended Change:</i> If poor alignment... <i>Justification:</i> Spelling error	Change is incorporated.
Mark Klung		300-4.8.4.2	<i>Current Wording:</i> For semiautomatic equipment, the test should also include operation by the control pushbuttons. For automatic equipment, the test should include operation initiated by cutting off power (opening a feeder circuit breaker) to see if an automatic transfer takes place <i>Recommended Change:</i> For semiautomatic equipment, the test should also include operation by the control pushbuttons. For automatic equipment, the test should include operation initiated by turning off power (opening a feeder circuit breaker) to see if an automatic transfer takes place <i>Justification:</i> Better nomenclature.	No change required.
Dennis Neitzel		300-4.8.4.6	Update to read "DC Circuit Breakers – Non-drawout".	Change is incorporated.



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Jim Kaufman		300-4.9.2 c	word spacing incorrect	Final edit incorporated. - ITT Action Complete 4/18/11
CDR Gelker		300-5	Page numbers are linked to appendix.	Final edit incorporated. - ITT Action Complete 3/8/11
CDR Gelker		300-5.2.2 e and 300-5.2.2 f	Change "safety glasses" to "safety goggles".	Change is incorporated.
Dennis Neitzel		300-5.2.3.3	Update to read 'Sheet' not 'Sheet'.	Change is incorporated.
Dennis Neitzel		300-5.3.3.4	Insert space between sentences 4 and 5.	Change is incorporated.
		300-5.2.3.2 and 300-5.2.3.3	New paragraph on de-greaser solvent	Changes incorporated
Dennis Neitzel		300-5.3.7.1	Update to read 'hand-crank' not 'hand crank'.	Change is incorporated. NSWC action to add SCAT codes for megohms.
Charles Burton		300-5.4.5.7	Appears this proposed change to the paragraph is out of place. (Header for paragraph 300-5.4 is Permanent Reconditioning of Electrical Equipment Which Has Been Submerged.) Extent of 5.4.5.7 bus bar repairs after such an event should be limited to cleaning of foreign matter from bus bars, insulators, drying, then megger the circuits prior to energizing. Further repairs should be identified per Fleet Tech Assistance via 2-Kilo per JFMM. The current proposed change needs some improvement: Blackening of silver plating is normal and does not need cleaning or warrant disassembly. If overheating of bus bar junctions is suspected a Fleet Tech Assist via 2-Kilo per JFMM is the normal route for proper assessment and determining required repairs. Other proposed changes related to plating or other should refer to switchboard spec MIL-S-16036 as the standard without elaborating on the details.	Intent of comment is incorporated.
Dennis Neitzel		300-5.5.5.1	Update to read 'atmospheric' not 'atmopheric'.	Change is incorporated.
Dennis Neitzel		300-B.2-1	Updated to read 'that' not 'thet'.	Change is incorporated.
Howard Snyder		300-C.2	Change 'bourne' to 'bourn'	Change is incorporated.
Jim Kaufman		300-E.1.3.2 (2)	word spacing incorrect	Final edit incorporated. - ITT Action Complete 4/18/11
Howard Snyder		300-E.1.3.2 (2)	Epoxylite was bought out by Elantas. Replace Epoxylite informaiton with Elantas informaiton as follows: Elantas PDG Inc Cage Code 97160 5200 N. 2nd Street St Louis, Mo. 63147-3122 Tele. 314-621-5700	Change incorporated.

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Howard Snyder		300-E.2.2 a	Replace 'Epoxylite Corporation' with 'Elantas PDG Inc.'	Change incorporated
Howard Snyder		300-E.2.3 g 4	Delete 'formerly MIL-DTL-16878,'	Change is incorporated.
Howard Snyder		300-F.1.7	Change 'barrier' to 'boundary'	No change required.
Dennis Neitzel		300-F.3.1	Update second to last sentence to read "...a chemical process known..."	Change is incorporated.
Howard Snyder		300-F.3.9	Change 'barrier' to 'boundary'	No change required.
CDR Gelker		300-G.1	Section does not offer technical guidance. It opinion with some facts. Recommend deleting entire section and incorporating statistics about mishaps into human error section in G.2.1.2.	Concur. This should be capturing best practices with statistics. SEA 05Z action.
Dennis Neitzel		300-G.1.1	Update second sentence to read "...reduce body resistance, creates conditions aboard..."	Intent of comment is incorporated.
CDR Gelker		300-G.1.1.1	Need numbers to complete.	See comment #909.
Dwight Williams		300-G.1.1.1	3. Appendix G. Step 300-G1.1.1 Electrical Safety "XXX". Needs to be filled in with numbers. Subsequent steps have same issue.	See comment #909.
Howard Snyder		300-G.1.1.1	Replace XXXX with correct data.	See comment #909.
Paul Mieszczanski		300-G.1.1.1 and 300-G.1.2.1	<p>Was someone supposed to fill in the data for "XXXX", "XX" throughout the supplement?</p> <p>A couple of for instances follow:</p> <p>300-G.1.1.1 Electrical Safety. What is electrical safety? This may sound like a dumb question since everyone knows about the ships' electrical safety program, but not so dumb when you consider the fact that in the last 18 years there have been XXXX shocks and two deaths reported to the Naval Safety Center. Also, of XXXX formal ships inspection reports reviewed, only XXXX were satisfactory.</p> <p>300-G.1.2.1 Shipboard Electrical Shock -Its Causes from Recent Statistics. Causes of shock accidents are all focused on human actions or failure to take specific actions. These human reasons are listed below in the order of highest cause:</p> <ul style="list-style-type: none"> <li>a. Inattention -XX%</li> <li>b. Failure to Recognize Hazard -XX%</li> <li>c. Improper Maintenance -XX%</li> <li>d. Inadequate Knowledge -XX%</li> <li>e. Haste -XX%</li> <li>f. Overconfidence -XX%</li> <li>g. Equipment Design/Fault -XX%</li> <li>h. Remaining -XX%</li> </ul>	Data collected and incorporated
CDR Gelker		300-G.1.1.1.1	Paragraph is judgmental and for a technical manual offers nothing. Recommend deleting.	Change is incorporated.

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CDR Gelker		300-G.1.2.2.2	Discusses analysis. Hard to analyze only 2 incidents. State as facts and eliminate the "analysis".	The intent of this comment is incorporated.
CDR Gelker		300-G.2	Should be start of Appendix. Rewrite with data from G.1 included under human and equipment failures.	Do not concur. No change required.
Dennis Neitzel		300-G.2.1.1	Insert space after 'both' in first sentence. Update last sentence to read "position" not "postion".	Change is incorporated.
CDR Gelker		300-G.3.2	Rewrite paragraph to remove judgment and opinion. Change second sentence to "When the skin is dry , it has a high resistance where the electrodes make contact and current enters and leaves the body." Start 4th sentence with "This is an exceptional..." Delete sentence "Mute witness...voltage circuits."	Change is incorporated.
CDR Gelker		300-G.3.3	Delete first sentence. Modify subparagraph a to "A person should never work on energized gear. This prevents their body from forming part of a closed circuit through which current can flow. Delete from subparagraph b the sentence "The reasons are obvious."	The intent of this comment is incorporated.
Dennis Neitzel		300-G.3.3 b	Update to read 'deenergize' not 'denenergize'. Delete repeated 'the' in first sentence.	Change is incorporated.
Dennis Neitzel		300-G.3.3.1	Insert space after 'they' and 'may' in first sentence.	Change is incorporated.
CDR Gelker		300-G.3.3.1	Paragraph is judgmental and for a technical manual offers nothing. Recommend deleting.	Do not concur.
CDR Gelker		300-G.3.4	Introduce Seaman I.R. Drop and V. Drop as a "Note" for examples.	No change required.
CDR Gelker		300-G.4.2	Delete first sentence.	Do not concur.
CDR Gelker		300-G.4.2.1	Delete last sentence. Does not offer information that helps scenario and may be confusing to the reader.	No change required.
Dennis Neitzel		300-G.4.2.2	Insert space before 'Figure 300-G-3'.	Change is incorporated.
Dennis Neitzel		300-G.4.3	Delete repeated 'one' in second sentence.	Change is incorporated.
CDR Gelker		300-G.4.4.2	Change "Bureau of Ships" to "NAVSEA"	Change is incorporated.
Dennis Neitzel		300-G.4.4.4.2	Updated to read 'pushes' not 'pushers'.	Change is incorporated.
CDR Gelker		300-G.5.1.1	Paragraph is judgmental and for a technical manual offers nothing. Recommend deleting.	No change required.
Paul Mieszczanski		300-G.5.3	300-G.5.3 DE-ENERGIZE AND TAG CIRCUITS...All the de-energized circuit breakers, switches and fuses shall be tagged out in accordance with {REPLACE "the Tag-Out User Manual S0400-AD-URM-010/TUM" with "reference (b)"}, to make sure that someone else will not inadvertently turn on the power. REASON: Consistent Navy way of referencing; and only need to correct the title once in the reference section vice throughout the manual.	No change required.
Dennis Neitzel		300-G.7.1.2	Updated to read 'arises' not 'raises'.	Change is incorporated.

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Dennis Neitzel		300-G.7.1.2 A	Updated to read 'arises' not 'raises'.	Change is incorporated.
Dennis Neitzel		300-G.7.2.4.6	Update to read "Use a megohmmeter (Megger®) or other insulation resistance"	No change required.
Dennis Neitzel		300-G.7.3	Update to read "water-soaked" not "water-soake d"	Change is incorporated.
CDR Gelker		300-H	Page numbers are linked to wrong appendix.	Final edit incorporated. - ITT Action Complete 3/8/11
Larry Schultz		300-H.1.2 (Figure 300-H-1)	1. Near top left for "EQUIPMENT GND LEAD" indicate "(Green)".	No change required. Not true in all cases.
Larry Schultz		300-H.1.2 (Figure 300-H-1)	2. Near lower left for free end of "6 AWG BARE STRANDED WIRE" indicate to "WORKBENCH CABINET OR AUXILIARY TOP".	No change required. The addition of the word "cabinet" not required.
Larry Schultz		300-H.1.2 (Figure 300-H-1)	3. Near mid right for "2 AWG INSULATED STRANDED GROUND WIRE" indicate "(Green)".	No change required. 300-H.1.2.a already contains this guidance.
Larry Schultz		300-H.1.2 (Figure 300-H-1)	4. Near lower right for "GROUNDING STUD" indicate 'three hex nuts or collar stud with two hex nuts'.	Change is incorporated.
Larry Schultz		300-H.1.2 a	1. After "size 2 AWG" indicate '(Green color insulation or marked with green tape, marked with green colored adhesive labels, marked with legible labels indicating green such that marking is visible at terminals and along the length of the cable.)'	Change is incorporated.
Larry Schultz		300-H.1.2 a	2. Delete the sentence "After the ground wire is installed, the grounding stud connection shall be painted the same color as the surrounding structure to prevent moisture penetration." Replace with "After the ground wire is installed, the grounding stud connection shall be cleaned and protected from moisture or corrosion. The connection shall be painted to the surrounding structure if visible or other suitable preservation may be used such as 'Scotchkote'."	Change is incorporated.
Larry Schultz		300-H.1.2 a	3. Delete the sentence "In existing installation, the ground wire can be other than green in color or designation." Replace with "If existing installed ground wire is other than green in color or marked with green tape, marked with green colored adhesive labels, marked with legible labels indicating green such that marking is visible at terminals and along the length of the cable, it shall be replaced or marked properly."	No change required.
Larry Schultz		300-H.1.2 a	4. Delete the sentence "If the ground wire is replaced it shall be replaced with a wire insulation green in color or designation." Replace with "If any insulated ground wire is replaced it shall be replaced with a proper wire having insulation green in color."	No change required.
Larry Schultz		300-H.1.2 b	1. In the first sentence, after "The workbench nearest the center of a row of workbenches shall be grounded by", delete "the" and replace with "size 2 AWG".	No change required.
Larry Schultz		300-H.1.2 b	2. In the last sentence reword to indicate 'the workbench nearest the center'.	No change required.

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Larry Schultz		300-H.1.2 b	3. Add a new sentence to indicate workbenches or assemblies without back panel assemblies or without grounding terminal shall have a grounding terminal or post installed (See Table 300-H-1(PART1)).	Comment is incorporated.
Larry Schultz		300-H.1.2 c	1. In the second sentence, after “insulated, stranded wire, size 2 AWG” delete the existing and replace with “(Green color insulation or marked with green tape, marked with green colored adhesive labels, marked with legible labels indicating green such that marking is visible at terminals and along the length of the cable).”	No change required, covered by 300-H.1.2.a.
Larry Schultz		300-H.1.2 e	1. In the first sentence, after “Equipment ground”, add “conductor connections”.	Change is incorporated.
Larry Schultz		300-H.1.2 e	2. In the second sentence, after “varnish (A-A-1800)”, replace the existing with “or other suitable preservation to protect from moisture or corrosion.”	Change is incorporated.
Larry Schultz		300-H.1.2 e	3. Replace the last sentence with, “If any bare ground wire is replace the proper bare wire shall be used or if any insulated ground wire is replaced it shall be replaced with a proper wire having insulation green in color.”	No change required, implied.
Larry Schultz		300-H.1.2 f	1. In the first sentence, after “normal shipboard operations”, replace the remainder with “will not damage or break any conductors and will not loosen the ground wire connection.”	No change required. Intent of comment is already captured.
Larry Schultz		300-H.1.2 g	1. Replace the second sentence with “Work surface grounding leads shall be insulated, stranded wire, size 10 AWG (green color insulation or green designation on the wire).”	Change is partially incorporated.
Larry Schultz		300-H.1.2 g	2. In the third sentence, after “length is 40 inches”, add the following, “exposed outside the back panel or from the aft of the work surface”.	No change required.
Larry Schultz		300-H.1.2 g	3. Replace the third and fourth sentences with “Grounding leads shall be connected the grounding bracket terminal (servit posts) and servit posts must be clean before connecting grounding leads”	Change is incorporated.
Larry Schultz		300-H.1.2 g	4. Reword the fifth sentence as “All servit posts are to be sealed with two coats of varnish (A-A-1800) or other suitable preservation to protect from moisture or corrosion.”	Change is incorporated.
Larry Schultz		300-H.1.2 g	5. Reword the last sentence as “If any insulated ground wire is replaced it shall be replaced with a proper wire having insulation green in color.”	No change required.
Larry Schultz		300-H.1.2 g	6. Add a new sentence after the existing third sentence as follows, “Equipment grounds for a workbench shall be installed such that a grounding lead shall reach all areas of the work surface.”	Change is incorporated.
Larry Schultz		300-H.1.3	1. Replace the first sentence with “Electrical/Electronic workbenches as a minimum are insulated from the top working surface to the deck as show in Figures 300-H-2 and 300-H-3 except the entire knee hole and foot rest area shall be insulated.”	Change is incorporated.

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Larry Schultz		300-H.1.3	2. Reword the fourth sentence as follows, "This is acceptable but is not required, however personnel works at the workbench should not be able to reach conductive items."	No change required.
Larry Schultz		300-H.1.3	3. Reword the last sentence as follows, "The deck at front or accessible sides of the workbenches shall be covered with electrical grade matting or be of an approved non-conductive material."	Change is partially incorporated.
Larry Schultz		300-H.1.3	4. Add new sentence as follows: "There shall be no fluid system or system that contains traces of fluid with mechanical joint or valve within three feet of a workbench without drip and spray protection such that no fluid can drip, spray or stream on or above the workbench."	No change required.
Howard Snyder		300-H.1.3 a	Awaiting NAVSEA decision for rubber blanket certification.	No change required.
Larry Schultz		300-H.1.3 (Figure 300-H-3)	1. Near bottom center for "PLASTIC LAMINATE" indicate "(1/32 inch minimum)".	ITT redrawing figure concurrently with SIB review.
Larry Schultz		300-H.1.3.1	1. In the second sentence after, "glued to the top substructure" add "of the 3/8 inch insulation".	No change required.
Larry Schultz		300-H.1.3.1	2. In the last sentence replace "Silicon", with "Silicon rubber materials".	No change required, sentence deleted.
Larry Schultz		300-H.1.3.1	3. Add a new last sentence, "The working surface shall have uniform illumination with a minimum of 42 foot-candles, there should be no shadows created by installed items or personnel using the workbench."	No change required.
Larry Schultz		300-H.1.3.2	1. After the existing subparagraph 'e', add a note as follows; (NOTE: 3/8 inch thick insulation in accordance with L-P-513 or ASTM D709 may be used to insulate all surfaces on the workbench except the foot rest."	Change is incorporated.
Larry Schultz		300-H.1.3.3	1. In the last sentence after "Drawing 53711-613-6054897", add "Sheet 10 through Sheet 12".	No change required. Not consistent with other references.
Larry Schultz		300-H.1.3.3	2. After subparagraph 300-H.1.3.3a, add a note as follows: (NOTE: The area above the workbench base insulation under the workbench cabinet front is not required to be insulated.)"	No change required.
Larry Schultz		300-H.1.3.3	2. After subparagraph 300-H.1.3.3a, delete the repeated Paragraph 300-H.1.3.1	Change is incorporated.
Larry Schultz		300-H.1.3.4	1. Reword the second sentence as "Electrical grade sheet deck covering conforming to MIL-M-15562, Type 1, shall be installed in front of insulated workbenches, on the kneehole foot rest, and if either end of the workbench is accessible to personnel, cover the deck at the end(s) of the workbench.	Change is incorporated.
Larry Schultz		300-H.1.3.4	2. After existing sentence three, add a sentence similar to the following, "The deck matting at electrically safe workbenches shall be in good repair; there shall be chair tie-down, no holes, no tears, no, or no raised areas (bolt heads, etc) within three feet of the workbench."	Do not concur. No change required.

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Larry Schultz		300-H.1.3.4	3. After existing last sentence, add a sentence similar to the following, "When the deck matting is removable at a workbench, an outline of the area covered by the mat shall be stenciled on the deck in yellow and lettering inside the area 3 inches high shall state "Electrical grade matting required"; this also applies to the footrest area."	No change required.
Larry Schultz		300-H.1.3.5	1. After existing last sentence, add a sentence similar to the following, "Any through-bolting with metal fasteners shall be removed."	No change required, already implied by existing requirements.
Larry Schultz		300-H.3.1	1. In subparagraph 'a', add "and test switchboards" after "receptacle connectors".	No change required.
Larry Schultz		300-H.3.2	1. After the existing, add the following sentence; "Workbenches not furnished with the multiple power outlet panels above shall have a symbol number 730.1 (MIL-R-2762/66) or symbol number 730.4 (MIL-R-2726/40) installed such that a duplex receptacle is furnished for each two foot of work surface." Also second sentence, "Where the back panel assemblies are insulated, the power receptacles shall be installed with non-conductive fasteners."	No change required.
Larry Schultz		300-H.3.3	1. After the existing, add the following sentence; "The test switchboard shall be installed at the workbench where it is readily usable without obstructs from items or structure and without test lead extensions. Additionally some ships may have the old IC test switchboard (obsolete) Navy symbol 2840 Test Switchboard [BuShip Dwg.9000-S6508-73677 - NSN 2H6625-00-752-7898]). If installed and disconnected from an IC switchboard, the switches on the IC switchboard shall be identified with red label plates and shall be verified to disconnect all power sources.	No change required.
Larry Schultz		300-H.4.1	1. Add after the third sentence as "The disconnect switches shall be located where highly visible at the entrance or main traffic area of the compartment and at the workbench, readily accessible to operate without having to cross over a victim, and identified by red target or be painted red.	No change required.
Larry Schultz		300-H.4.1	2. Change the Type 3 description to the following, "Type 3. Switches or circuit breakers in power panels located in the compartment used to disconnect each type of power to workbench EPOPs or receptacles and test switchboards. Some ships may have combinations of two or more types.	Change is incorporated.
Larry Schultz		300-H.4.1 c	1. Change the first Type 3 sentence by adding "Switches or" before the existing.	Change is incorporated.
Larry Schultz		300-H.4.2	1. At the end, add "or circuit breakers".	Change is incorporated.
Larry Schultz		300-H.5 d	1. Change the sentence to read, "Adjacent to the workbench(es) and test switchboard (if installed) post the proper (current) cardiopulmonary resuscitation placard and the sign 'Warning: Electrical Shock; Do Not Touch Energized Circuits'.	The intent of this comment is incorporated.

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Larry Schultz		300-H.6	1. For NOTE 1, Add at the end add a sentence such as, "Workbenches with associated test switchboards shall not normally be considered for re-designation."	No change required.
Larry Schultz		300-H.6	2. For NOTE 5, Delete existing and replace with the following; "The un-need electrical power shall normally be discontinued at a power panel or fuse box. The discontinued circuits shall be properly marked as "SPARE" and the associated switching and cabling removed and actions shall be noted by 'pen and ink' on ship's hard copy of the power distribution drawing(s). If authorized by Type Commander; the electrical workbench power distribution panel and electrical test switchboard may be opened and disconnect power leads from their terminals for all circuits providing 450V, DC and 400Hz power with the exception of the circuit providing 110V power for the convenience outlet. After properly identifying power leads lift, tape, label and secure the disconnected leads. The actions shall be noted by 'pen and ink' on ship's hard copy of the power distribution drawing(s)."	No change required.
Larry Schultz		300-H.6	3. For NOTE 7, at the end, add the following sentence; "Receptacles de-energized shall be covered or removed and blanked."	Change is incorporated.
Larry Schultz		300-H.6	4. For NOTE 8, at the end, add the following sentence; "The work surface ground leads shall be removed and all electrical safety placards near the re-designated shall be removed."	No change required.
CDR Gelker		300-H.6.1 Note 8	Second part of the sentence implies wording for a sign. Should clearly state that it is should be a sign and be placed above the workbench.	No change required.
CDR Gelker		300-H.6.1 Note 9	Wording is awkward. Appears that it should state "if leads are lifted, circuits are available."	Intent of comment is incorporated.
Mark Klung		300-vf (page 300-149)	<i>Current Wording:</i> Paragraph numbering incorrect. <i>Recommended Change:</i> Recommend numbering this paragraph 300-4.5.7.10 <i>Justification:</i> Editorial.	Change is incorporated.
Dennis Neitzel		300-vf-a-2	Update to read 'precautions' not 'recautions'.	Change is incorporated.
RPPY		acronyms	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.



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Dennis Neitzel		Add paragraph 300-2.1.2.6.xx	300-2.1.2.6.xx Shock Protection Boundaries. The shock hazard analysis is used to determine if a risk of shock or electrocution might exist when personnel are working on or near electric equipment. The risk increases as a worker approaches equipment where there are exposed energized electric conductors or circuit parts. Because of this hazard issue approach boundaries must be identified and established. Based on voltage and potential exposure, the limited, restricted, and prohibited approach boundaries are identified. The level of personal protective equipment for the shock hazard is identified with the hazard analysis and the establishment of the boundaries. These boundaries also identify where only qualified workers are permitted to work and where unqualified workers are not allowed to work. The only condition where an unqualified worker is permitted to cross the Limited Approach Boundary is after the exposed electric conductors or circuit parts have been placed in an electrically safe work condition (deenergized, tagged out, verified, and grounded	No change required. These definitions are consistent with the approach taken in accordance with NFPA 70E for commercial applications and do not apply to the approaches taken in this document.
Dennis Neitzel		Add paragraph 300-2.1.2.6.xx	or isolated). These boundaries are defined as follows: <ul style="list-style-type: none"> <li>• Limited Approach Boundary – The limited approach boundary identifies the further most point from exposed energized electric conductors or circuit parts where a shock hazard exists. Unqualified workers are not permitted to cross this boundary while the shock hazard exists. Qualified workers are permitted to work within this boundary without shock protection PPE provided they do not cross the restricted approach boundary. Warning signs and barricades should be installed at this boundary in order to help protect others working in the area. This boundary is for shock only and does not identify the arc flash hazard.</li> <li>• Restricted Approach Boundary – The restricted approach boundary identifies the point at which an increased risk of electric shock exists, primarily due to the potential for electric arc over combined with inadvertent movement of the worker. Shock protection PPE is required to be used by the qualified worker, working within this boundary, if their work activities might cause them to make contact with the exposed energized electric conductors or circuit parts. This boundary</li> </ul>	No change required. See comment #986.
Dennis Neitzel		Add paragraph 300-2.1.2.6.xx	is for shock only and does not identify the arc flash hazard. <ul style="list-style-type: none"> <li>• Prohibited Approach Boundary – The prohibited approach boundary identifies the point where work is considered the same as making contact with the electrical conductor or circuit part. The qualified worker is required to wear shock protection PPE at all times when working within this boundary. Crossing this boundary also requires a fully authorized energized electrical work permit. This boundary is for shock only and does not identify the arc flash hazard.</li> </ul>	No change required. See comment #986.
CNSL N43		Appendix B	APP B, discusses SIS motors, but does this info apply to the fleet at all? Is there any fleet knowledge on this subject? Are there any fleet activities that plan on being certified?	Yes, and there are continuous certification processes. No change required.

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CNSL N43		Appendix D	APP D discusses using fiberglass tape, but I see no mention of PPE requirements,. Should there be PPE required, especially if cutting or if the vapors are harmful?	No change required. This is a high-level document. Appropriate PPE requirements are contained in local instructions.
CNSL N43		Appendix E	APP E, Para 300.E.1.3.4 discusses shop trials with trickle varnishing motors on spares....do we have training or spare motors? Are there any SME's on this method in the fleet?	No change required. These are high-level guidelines. SMEs exist.
CNSL N43		Appendix E	APP E, Para 300.E.2.3.f calls for a "Red Devil blower" for ventilation on the ship, but theses have been banned and taken off most ships. Are we asking to reprocure them?	ITT action to do word search on "Red Devil blowers" and replace with "portable ventilation units". - ITT Action Complete 3/8/11
CNSL N43		Appendix E	APP E The overall method of trickle varnishing seems entirely too long, detailed and cumbersome.	See comment #991.
PPEA		Appendix H	a. Comment: Page numbering for the Appendix is incorrect throughout the section. Specifically, page numbers J-1 through J-11 should be changed to H-1 through H-11. b. Rationale: Editorial correction.	ITT action to fix. - ITT Action Complete 3/8/11
CNSL N43		Appendix H	APP H Para 300.H.1.3 discusses deck matting and says areas adjoining bench "may" be insulated. These areas should be insulated if metal or hull can contact them. What is the point of three feet of insulated deck matting if we allow a pipe two inches away on the side to be available to shock the technicians?	No change required.
CNSL N43		Appendix H	APP H, Figure 300-H-3 - Why is no insulation required on the back of the bench? There should be insulation there or it should be made of insulated material.	No change required. This level of detail is not appropriate for NSTMs.
CNSL N43		Appendix H	APP H, Para 300.H.1.3.4 talks about deck matting....if no sealant is available, can we overlap the matting to meet the requirements? This should be spelled out.	No change required. This level of detail is not appropriate for NSTMs.
CNSL N43		Appendix H	APP H, Para 300.H.4.1 discusses bench isolation and calls for a "switch" for disconnect. This is pretty vague and not descriptive at all, vice the current requirement of a pushbutton-type disconnect. The NSTM needs to be specific as to what switches are acceptable and list NSN numbers.	This level of detail is not appropriate for NSTMs.
CNSL N43		Appendix H	APP H, The entire section of 300.H.6 talks about downgrading, and calls for a DFS...but for what purpose? Are all ships grandfathered in, or will they have to DFS all old benches....How will some know if a bench was downed or removed from years past? Will it be a temp or perm? Why does this section not mention a "CK" as well? This also does not call for proper dead-ending of cables that are disconnected at the test panel.	SEA 05Z action to review.
PPEA		Appendix I	a. Comment: Page numbering for the Appendix is incorrect throughout the section. Specifically, page numbers J-12 through, J-20 should be changed to I-1 through I-9. b. Rationale: Editorial correction.	ITT action to fix. - ITT Action Complete 3/8/11

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PPEA		Appendix I	a. Comment: The table does not include the 40 cal/cm2 face shield required in table 300-2-1 on page 300-47. b. Rationale: The list of safety equipment in Appendix I should include the safety equipment identified in the NSTM chapter.	Table has been modified, comment incorporated
John Lastowski		APPENDIX I		SCAT codes added for all test equipment on the tables within.
John Lastowski		APPENDIX I	Paragraph & Table numbering throughout is inaccurate and should be reformatted.	ITT action to fix. - ITT Action Complete 3/8/11
RPPY		APPENDIX I	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
RPPY		APPENDIX I	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
RPPY		APPENDIX I	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
RPPY		APPENDIX I	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
Howard Snyder		APPENDIX I	Correct paragraph and table numbering throughout Appendix should be 300-I.X.	ITT action to fix. - ITT Action Complete 3/8/11
Howard Snyder		APPENDIX I	Correct page numbering	Final edit incorporated. - ITT Action Complete 3/8/11
CNSL N43		Appendix I or J	24. APP I(or J). Para 300.I.2.5.3.3 Regarding rubber gloves... a. Valid questions from CNSL EMC - is there an injury precedence? Where is the periodicity coming from? Can gloves be used past the 6 month mark in case of emergency or extenuating circumstances...if so, a blurb should be put in there. Are there enough gloves on hand on ships...also, funding to buy more? Process for rejected gloves? Still continue standard Navy PMS? b. DSD comment - Perhaps we need to list the overarching federal regulation that has required the testing of the insulating material of the rubber gloves to make this a more palatable transition for the fleet. The funding question MUST be ironed out before we release this manual. Also, the supply system training for doing the logistics of swapping the gloves out and getting a set tested needs to be thoroughly examined and working before we release this. Do we have adequate room on the ships for a second set of gloves? By whom and where will they be stored – EM or supply?	Paragraph deleted.
Paul Mieszczański		Appendix J, page J-15	Insert "and" for the table title: Circuit Breaker and Fuse Devices. ALIGN rows; & for the cotter pin row, REPLACE "LOCKING DEVICES" with "CLIPS".	Change is incorporated.

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SUBPAC N4		Arc flash clothing/arc flash boundary	a. Table 300-2-1 lists requirements for initial voltage verification checks. Table 300-2-2 lists similar requirements for fuse removal and replacement. Table 300-2-3 lists requirements for draw-out type circuit breaker rack-in/out. Arc flash clothing is required PPE for some evolutions on all tables that would also require an arc flash boundary. Currently, submarines do not maintain arc flash clothing, nor is there an authorized stowage location for arc flash clothing onboard submarines. Additionally, arc flash clothing is expensive (~\$800 for a jacket/pants set, ~\$400 for one set of coveralls) and requires re-certification by commercial vendors every six months (the certification facility closest to Pearl Harbor is in San Diego, CA). Given the relatively low potential systems encountered onboard submarines, adding a requirement to obtain and maintain arc flash clothing is administratively and fiscally burdensome and will require an as yet undefined storage location.	1. Comments associated with tables have been incorporated. 2. Submarines will require 12 cal/cm2 coveralls. Cost will be less than \$90 per set. 3. These coveralls can be stored in any location. 4. There are no routine certification requirements. No change required.
SUBPAC N4		Arc flash clothing/arc flash boundary	b. <b>Recommend</b> eliminating the requirement for arc flash clothing/arc flash boundary for work on submarine systems. If arc flash clothing will be required, recommend establishing Navy-wide processes to issue and maintain issuing arc flash clothing to all ships before invoking this requirement. Additionally, recommend initiating a process to put arc flash clothing into the Navy supply system and establishing facilities (similar to calibration exchange) in each submarine homeport where boats can exchange arc flash clothing to meet the six month re-certification requirement.	1. There are no routine certification requirements. 2. AELs are being updated/created. 3. NAVSEA is working with Program Offices and Type Commanders on this issue. No change required.
Johnathan Gatliff		Caution statement on page 300-140	Caution statement on page 300-140 has inadvertent space between the "s" and "uch".	Change is incorporated.
Howard Snyder		Electrical Safety Signage	Add table number to table "Table 300-I-3"	Change is incorporated.
John Lastowski		FIGURE 300-2-2	Figure 300-2-2 is a great example of 1980's dot-matrix printing. We need to upgrade our stick figures	ITT redrawing figure concurrently with SIB review.
CESWG		FIGURE 300-2-3	NSN numbers not readable. Are they still valid NSN's? <i>Review Action:</i> : All NSN's are valid	ITT action to ensure all NSN numbers are legible. ITT redrawing figures concurrently with SIB review.
Paul Mieszczanski		FIGURE 300-2-3	{REPLACE "To be applied by Repair Party to lock"... with "To be applied to block" ...} REASON: This will allow Ship's Force under TUM Appendix F paragraph 4.b.2 and Repair Activities under TUM Appendix C to apply the clips/covers beyond Repair Party Damage Control repairs.	Agree. ITT redrawing figure concurrently with SIB review.
John Lastowski		FIGURE 300-2-3	The NSNs are listed with the figure. Is that normal? What if a part becomes obsolete or changes the NSN? Are we going to change this manual? Recommended deleting.	No change required.

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John Lastowski		FIGURE 300-2-3	The legibility of this drawing and Figure 300-2-2 is borderline unreadable. This may be due to the review copy having been printed, scanned, re-printed, and re-scanned through several cycles	ITT redrawing figure concurrently with SIB review.
John Lastowski		Figure 300-2-9-1	This figure has been "squished" in the vertical direction. And should be corrected.	This figure is deleted. No change required.
John Lastowski		Figure 300-2-9-2	Does not differentiate between having one or two rescuers.	This figure is deleted. No change required.
Howard Snyder		Figure 300-2-9-2	Add '-' to beginning of each line the the flowchart	This figure is deleted. No change required.
Dennis Neitzel		Figure 300-4-7	Add space between Inductive and Kick in figure title.	Change is incorporated.
Dennis Neitzel		Global	Update to read 'vacuum' not 'VACuum'.	ITT action to fix. - ITT Action Complete 3/10/11
Dennis Neitzel		Global	Update to read 'equivalent' not 'equalivent'.	ITT action to fix. - ITT Action Complete 3/10/11
Dennis Neitzel		Global	Update to read 'anti-shock' not 'anti shock'. Update to read 'alignment' not 'alinement'. Update to read 'aligned' not 'alined'	ITT action to fix. - ITT Action Complete 3/10/11
Dennis Neitzel		Global	Update to read 'lock washers' not 'lockwashers'.	ITT action to fix. - ITT Action Complete 3/10/11
Jim Kaufman		Global	1. The revision should be issued with a change synopsis sheet documenting changes.	ITT action to generate (high level).
Jim Kaufman		Global	2. The entire document should be checked for formatting and spelling errors	ITT action.
Jim Kaufman		Global	3. Are all guidelines provided by the recent TWH safety advisories incorporated in this revision? Will this revision supersede the current advisories?	Current advisories incorporated.
Charles Burton		Global	Hard to locate proposed changes to the draft as most have not been highlighted.	No change required.
Mark Klung		Global	<i>Current Wording:</i> The word "vacuum" through-out the document is spelled "VACuum" <i>Recommended Change:</i> Recommended changing all instance of "VACuum" to "vacuum". <i>Justification:</i> Editorial.	ITT action to fix. - ITT Action Complete 3/10/11
CESWG		Global	All Warning Statements should be bold, different font and italicized. Color is optional, most people use copies in black and white. <i>Review Action:</i> 11-5-10 Done	ITT action to ensure change is incorporated. - ITT Action Complete 3/10/11
CESWG		Global	What about hazards of Energized Work in shipboard Battery Compartments? (See Note 2 below)	Change is incorporated.
CESWG		Global	All figures should be made clearer so all comments and writings are readable.	ITT redrawing figures concurrently with SIB review.
CDR Gelker		Global	Change "VACuum" to "vacuum".	ITT action to fix. - ITT Action Complete 3/10/11

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CDR Gelker		Global	Does not address changes identified in USS SAN JACINTO Safety Investigation Report. Recommend adding these in this revision. Recommendations are contained in the SIREP, COMEXPSTRKGRU FIVE 281300Z JUN 10.	NAVSEA action to evaluate.
Wes Bailey		Global	Can Civilian Contractors or Civil Servant employees be tasked to work directly to NSTM 300 as the primary Safety document? <i>Review Action:</i> Legal question, based on contractual arrg. NSTM doesn't determine safety requirements to the level of OSHA fed. Regulation.	Governed by contractual requirements. No change required.
Wes Bailey		Global	What about hazards of Energized Work in shipboard Battery Compartments? (See Note 2 below) <i>Review Action:</i> Some of the Rev 8 changes already apply to Batt Well work. Could suggest a specif batt well paragraph.	Change is incorporated.
John Lastowski		Global	The paragraphs on the pages throughout extend into the "three hole punch" area on the right side of the page. When printed on two-sided paper and entered into a three-ring binder, some of the letters on even (left side) pages are removed by the three hole punch.	No change required.
John Lastowski		Global	The overall document has requirements embedded within precautions and "good ideas". From an operator perspective it would be helpful to lay out the "good ideas" and training material in one section and the true-you-must-follow-them requirements in a stand-alone section.	Change is incorporated.
John Lastowski		Global	The formatting of section and subsection titles has been changed inconsistently. There is now no standardization for the format of these titles. The old format for the titles of sections and subsections was: SECTION 0 (centered) TITLE OF SECTION (centered) 300-0.0 BOLD, CAPITALIZED, SEPARATED FROM PARAGRAPH. 300-0.0.0 ALL CAPITALIZED. In line with paragraph. 300-0.0.0.0 Each Word Capitalized. In line with paragraph. 300-0.0.0.0.0 These paragraphs (and subparagraphs) had no titles.  These sub-sections should be reorganized as much as possible to segregate and articulate one sub-section as "discussion or principles" and the following sub-section as "requirements" This should be done for sections 2.1 through 2.7 at a minimum.	ITT action to ensure consistency. - ITT Action Complete 3/10/11

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John Lastowski		Global	<p>General Multiple E</p> <p>The overall formatting of the manual is rather compressed. If the intent is to minimize or eliminate the use of local instructions that repeat the same information available in NSTM 300, consideration should be given to formatting some sections (e.g., 2.5.2.2 and 2.5.3) in a manner that makes the actual pages more usable as checklists (e.g., use of indents, spacing, etc.).</p> <p>2. General</p> <p>The layout and appearance of the manual is dated. Concurrent with the major revision of technical content, Bettis recommends that the manual be provided in an electronic and hardcopy format that is more consistent with the appearance of other technical manuals produced in the 2010 time frame that navy personnel will come in contact with.</p>	Change is made to clarify requirements vice discussions. Document will be available in electronic format (TDMIS).
John Lastowski		Global	<p>"Notes" are not allowed per Procedure G-1 Procedures for Maintaining and Distributing Manuals in the Naval Nuclear Propulsion Program. Since this is a NAVSEA 05 document, these "Notes" may be acceptable.</p> <p>Warnings (and Cautions) are used by Procedure G-1 to highlight information needed to prevent injury (or equipment damage). Since this is a NAVSEA 05 document, the requirements do not necessarily apply to this document, but are recommended.</p>	Comments incorporated as much as practical.
John Lastowski		Global	AC and DC abbreviations are presented inconsistently throughout the chapter. Examples: 300-2.1.2.1 ac and dc, 300-2.1.2.4 AC, 300-2.2.3.1 DC	ITT action to fix. - ITT Action Complete 3/10/11
SUBLANT N4		Global	<p>Recommend the following prior to invoking arc flash requirements:</p> <p>(1) NAVSEA issue arc flash and other electrical safety equipment to all ships. This must not be a TYCOM resource burden.</p> <p>(2) Ensuring that the navy supply system can support arc flash and other proposed mandated electrical safety equipment.</p> <p>(3) NAVSEA establish facilities or processes in fleet concentration areas where ships can either take their arc flash and other electrical safety equipment for certification or exchange it for certified arc flash and other electrical safety equipment.</p>	See comment #1012 and #1013.
Howard Snyder		Global	Change "FIGURE" to "Figure"	No change required.
Thom Halo		Global	Would like to have a marked up copy (i.e. what has changed?). Needs more time to review if there is no marked up copy.	No change required.
CNSL N43		Global	In general, the draft was satisfactory but has many TYPOs and grammatical errors. We have noted some of these, but most of our comments are regarding the substance of the document.	Final edit incorporated.

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CNSL N43		Global	Throughout the document there is an annoying typo vacuum is spelled VACuum. Likely caused by a blanket change gone wrong and it should be fixed.	ITT action to fix. - ITT Action Complete 3/10/11
Alan D. Finley		Global	<p><b>Category:</b> Battery Well Electrical Safety</p> <p><b>Comment:</b> The requirements for entering the battery well at a submarine or prototype are not in one central location. The reader is often referred to reference (b) when the complete list of requirements is not there.</p> <p>The precautions in reference (b) are primarily focused on proper operation and maintenance of the ship's battery. They are designed to prevent or minimize equipment damage, not maximize personnel safety. NSTM 300 should be the document that one refers to when electrical safety is concerned. Specific precautions should be added because if one were to follow these general requirements, entering and working in the battery well falls under "particularly hazardous" work on energized equipment. The worker is both entering the equivalent of an energized switchboard and performing evolutions where work requires contact by tools to energized components.</p>	Change is incorporated.
Alan D. Finley		Global	<p><b>Recommendations:</b> The specific precautions for entering the battery well for maintenance or cleaning should be explicitly called out in NSTM 300 as being applicable only to that set of circumstances. This would be consistent with 4160V safety precautions. As an example, not all ships utilize a 4160V electrical distribution system, yet the precautions for work on voltages of the magnitude are included in NSTM 300. In keeping with the 4160V precedent that has already been set, the requirements for entering and working in the battery well should be added to NSTM 300.</p>	Intent addressed. Based on changes, 4160 is not specifically addressed.
Alan D. Finley		Global	<p><b>Category:</b> Disconnect links</p> <p><b>Comment:</b> There are no precautions for the operation of disconnect links.</p> <p><b>Recommendations:</b> Since this evolution contains hazards similar to racking out a circuit breaker with regards to arc flash/blast, it is suggested to add disconnect link operation to Table 300-2-3 to capture the required safety precautions and PPE. Additionally, insert a section in the test with verbiage from reference (d) section 320-2.2.6.4.n regarding only operating bus disconnects when they are de-energized or, in the case of the battery disconnects, when they are not under load.</p>	Change is incorporated.
Howard Snyder		Global	"Figure" not "FIGURE"	No change required.
CESWG		NOTE 1. Using Ref. (1)&(2)	Ref.(1) is the Electrical Safety Chapter from Lawrence Berkeley National Laboratory, D.O.E. Ref. (2) is the 'Energized Electrical Work Planning Guidance' is taken from Ref. (1) see section 8.14 Appendix Q.	No change required.



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Wes Bailey		NOTE 1. Using Ref. (1)&(2)	Ref.(1) is the Electrical Safety Chapter from Lawrence Berkeley National Laboratory, D.O.E. Ref. (2)is the 'Energized Electrical Work Planning Guidance' is taken from Ref. (1) see section 8.14 Appendix Q.	No change required.
Wes Bailey		Note 2.	Ref. 1 & 2 above also show a method that covers the hazards from Batteries that could help define the hazards of this work.	No change required.
Gary Watson		NSTM 300, sections 1, 2, and appendix I	NAVSEA 05Z failed to include their commitment for the 4 SY's from the December 9-11, 2008 meeting to include a note in Rev 8 that tells ships force that SY's use Chapter 230 for maintenance during scheduled availabilities. Quote from the minutes that Khosrow agreed to was this: "Naval Shipyards execute electrical work during assigned availabilities in accordance with the OSHE NAVSEA Control Manual Chapter 230, Electrical Safety Policy."	SEA 05Z action to review.
Jim Kaufman		Page 300-140	In the caution statement, the word such is spread out	Fixed.
Jim Kaufman		Page 300-19	Remove 'Page' between 300-H.1.3.4 and 300-H.1.3.5	ITT action to fix. - ITT Action Complete 3/10/11
Mark Klung		Page 300-219	<i>Recommended Change:</i> Label the figure "Figure 300-4-19 60-Hz TO DC RECTIFIER POWER CIRCUIT, SIMPLIFIED" <i>Justification:</i> Proper identification of Figure.	Change is incorporated.
Mark Klung		Page 300-227	<i>Recommended Change:</i> Label the table "Table 300-4-11 DIMENSIONS OF ROUND FILM COATED MAGNET WIRE" <i>Justification:</i> Proper identification of Table	Change is incorporated.
EMCM Cox		Page 300-57, N/A	The warning at the top of the page is poorly worded and basically says the same thing twice.	Change is incorporated.
NNSY Code 2330		Page 300-57, Warning	On page 300-57 the warning at the top of the page does not agree with paragraph 300-2.5.6.2.2 this warning should be moved to just before paragraph 300-2.5.6.2.3.	Change is incorporated.
CESWG		Paragraph #: Note 2.	Ref. 1 & 2 above also show a method that covers the hazards from Batteries that could help define the hazards of this work.	Change is incorporated.
CESWG		Ref. (1)	H:\DOE\Pub-3000 Chapter 8 ELECTRICAL SAFETY REV'D 08-10.mht	Change is incorporated.
Wes Bailey		Ref. (1)	H:\DOE\Pub-3000 Chapter 8 ELECTRICAL SAFETY REV'D 08-10.mht	Change is incorporated.
CESWG		Ref. (2)	Comment: <a href="http://www.lbl.gov/ehs/pub3000/CH08/CH8_AppQ.html">http://www.lbl.gov/ehs/pub3000/CH08/CH8_AppQ.html</a>	Change is incorporated.
Wes Bailey		Ref. (2)	<a href="http://www.lbl.gov/ehs/pub3000/CH08/CH8_AppQ.html">http://www.lbl.gov/ehs/pub3000/CH08/CH8_AppQ.html</a>	Change is incorporated.
Gus Zografos		ref: 5100.19 pg.B12-2	Can you please add the following: Safety Shoes: Electrical 8430-00-611-8314 (series) (2) Special safety shoes: (b) Safety shoes with special electrical hazard soles are used to guard against shock hazards when performing electrical work and shall be provided to EMs, ETs, and personnel working around high voltage.	This is being removed from 5100 series instruction; therefore, no change required.

S9086-KC-STM-010/300, NSTM Chapter 300, Electric Plant-General  
Intermediate Review Consolidated Comments

Paul Mieszczanski		Reference b	Reference b. NAVSEA S0400-AD-URM-010/TUM, Tag-Out User Manual (TUM). {Replace User with Users.} REASON: Correct Title.	Change is incorporated.
RPPY		References	Comments are NOFORN, see RPPY letter A4W RPPY 10/410-1/4109	Change is incorporated.
CESWG		Sections 1, 2, and appendix I	NAVSEA 05Z failed to include their commitment for the 4 SY's from the December 9-11, 2008 meeting to include a note in Rev 8 that tells ships force that SY's use Chapter 230 for maintenance during scheduled availabilities. Quote from the minutes that Khosrow agreed to was this: "Naval Shipyards execute electrical work during assigned availabilities in accordance with the OSHE NAVSEA Control Manual Chapter 230, Electrical Safety Policy." <i>Review Action:</i> 11-5-10 Added note to Section 2.1.1: <u>NOTE</u> Naval Shipyards execute electrical work during assigned availabilities in accordance with the OSHE NAVSEA Control Manual Chapter 230, Electrical Safety Policy	NAVSEA 05Z action to review.
NNSY Code 2330		TABLE 300-2-1	On page 300-47 Table 300-2-1 indicates that for performance of the IVV in circuits 30volts or greater that insulating mats are required. I thought that insulating mats were not going to be required for IVV performance in low risk applications.	Insulating mats are required between 30 and 1000 volts, not required less than 30 volts. No change required.
NNSY Code 2330		TABLE 300-2-1	On page 300-47 in Table 300-2-1 1000 volts or lower low risk should require signs.	Change is incorporated.
John Lastowski		TABLE 300-2-1	The CPR requirement is not captured in the table	No change required.
John Lastowski		TABLE 300-2-1	Initial Voltage Verification (IVV) Checks; Requirements for fuse removal and replacement; Requirements for draw-out type circuit breaker rack-in/out There is no consistency regarding the requirement that a safety line be used when removing a fuse from an energized system >1000V and racking a circuit breaker out of a live switchboard >1000V. (Table 300-2-2 and 300-2-3) Explain why the difference exists or add a safety line row to Table 300-2-2.	Change is incorporated.
John Lastowski		TABLE 300-2-1	Should have a column added under "Insulated Tools" noting that a "Proximity voltage probe" is needed for work on 1000 volts or higher. A statement should also be added to paragraph 300-2.4.3 noting the use of "Proximity voltage testers."	OBE. Changed to state that use of proximity detector is optional. No additional changes required.
John Lastowski		TABLE 300-2-1	If section 2.4.3.1 states that anything less than 30 V is not work on energized gear then why do I need to do anything for IVVs on a system less than 30 Volts?	Change is incorporated.